SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

COAL AND IRONWORKS IN NORTH WALES.

THE MOSTYN IRONWORKS AND COLLIERIES.

The production of pig-iron in North Wales has been of a limited and irregular character at the works of the two or three firms engaged in the trade; but there is now every prospect that the out-put will be very largely increased by the furnaces recently completed at Mostyn, and where it is said others will be added. New fields of ironstone, including some very fine hematite, are also ready to be opened out, so that it is by no means improbable that the present out-put will be more than doubled in the course of a very few years. Flintshire, which is a very small county, containing only 189,905 acres, besides its lead and coal, has also a good deal of ironstone, which can be easily raised. Of the entire extent of its fields of iron ore no actual estimate has been formed, the working, so far indeed as the northern part of the Principality is concerned, being nearly confined to it, the places where it is raised being at Prestatyn, near Rhyl, and at the Cwm Mountain, from which the Mostyn Works are partly supplied. The quantity of ore raised and iron made for the five years preceding 1871 was as follows:—

	Ironstone.	Pig-iron.
1866	56,682 tons.	25,515 tons.
1867	44,082 ,,	32,843 ,,
1868	36,313 ,,	37,046 ,,
1869	33,493 ,,	38,530 ,,
1870	59,240 ,,	42,695 ,,

The Mostyn furnaces have only been completed and put in blast recently, and are now being fully worked. They are situated close to the principal colliery by the side of the River Dee, in a rather picturesque district, being sheltered on the land side by a fine belt of large trees, on the rising ground seperating the park of Lord Mostyn from the road. The furnaces are both iron cased, about 84 ft. in height, and 10 ft. in the bosh, worked with six tuyeres, and form prominent landmarks to the vessels traversing the Dee, which at that point appears to be about five or six miles in breadth. The gas is taken from the top in the usual manner for heating the stoves and boilers. For the blast there is a very good beam-engine of 50-horse power, with a 46-in. cylinder and 8-ft. stroke. There is a large and well-arranged platform going round the top of the furnaces, the lift being worked by a small engine. There are five double-flued boilers, 48 feet long, and all the other essentials. The coke is made near to the furnaces, there being 64 ovens going, and eight more just completed, whilst the lime is supplied from Holywell, some six or seven miles distant. The ore is all calcined at the works, and is mixed, some being supplied from Cwm Mountain and some from Santander, in Spain. There is every facility for unloading the ore, for by the side of the colliery there is a dock, in which were several vessels at the time of our visit, including a steamer which plies between Mostyn and Liverpool. There are also stationary and travelling cranes, with the usual requirements for shipping and unshipping, whilst a new dock is in course of construction. The great advantage of having a small port in connection with the pits and works is shown by the fact that vessels from Spain, or any other part of the world, conveying ore to Mostyn, instead of returning in ballast can take in a return cargo of coal—an advantage of very great importance. As the firm makes all its own castings, and as those will very greatly increase—as we were informed that the site for several more blast-furnaces was drawn on the plan—there is a tolerably extensive foundry and fitting shop, together with blacksmiths' and carpenters' shops, with cabins for the workmen, as well as all the usual requirements for doing an extensive business in the best and most expeditious manner. The weekly output of iron, which is of good quality, is approaching 400 tons, and for which there is an immediate demand.

The coal seams of Flintshire are most valuable, there being upwards of 15 seams at least workable, and in no part, perhaps, are they better developed than in the Mostyn district. The New Red Sandstone, it may be said, is to be found throughout the greater part of the county, and the coal measures run along the entire coast line of the estuary of the Dee, and in the basin of that river. Beds of shale and sandstone underlie the coal, cropping out from beneath it, and separating the coal district from that occupied by the mountain limestone. Of the value of the coal seams in the Mostyn district the following section will give some idea, and it will be seen that several of them are much thicker than those being worked in the principal mining districts in England:—

Name.	Yd.	ft.	in.	Name.	Yd.	ft.	in.
1.—Cannel	1	0	0	9.—Coal, Little	0	1	8
2.—Coal of good quality	2	0	0	10.—Coal, Two-yard	2	0	0
3.—Coal, Three-quarter	0	2	3	11.—Coal, Durbog	2	0	0
4.—Coal, Five-yard	3	0	9	12.—Coal, Upperstone	1	0	0
5.—Bottom coal	1	0	0	13.—Coal, Lower	0	2	0
6.—Coal, Cannel	0	1	0	14.—Coal, Three-quarter	1	0	9
7.—Coal, Three-yard	3	0	0	15.—Coal	0	1	8
8.—Coal, Cannel	0	1	3				

No doubt there are other seams below the above which will be sunk to, but those being worked at the Mostyn Pits are those known as the Five-yard and the Three-yard. The principal colliery is close to the dock, and has the railway by its side. There are three shafts—the drawing one being sunk to a depth of 200 yards, and the second, the upcast, being 250 yards deep, with a pumping-shaft. The drawing-shaft is 14 ft. in diameter, but divided in the centre by a wooden partition, so that drawing is performed on both sides, the same as if there were two pits. The shaft is bricked and tubbed for some distance. At the bottom of the pit there is a coupled low-pressure engine for drawing along the corves by means of a tail rope from the far end. By that means some 40 or 50 corves are drawn at a time, and so effecting a great saving by dispensing with horses.

There is a double set of head gearing of a massive character about 24 feet from the surface, the pulley wheels being 14 feet across. The cages are double-decked, drawing four corves (containing each about 7 cwts. of coal) at a time. The pumping-engine is said to be the largest in North Wales, and is certainly a very powerful one. It is of about 900-horse power, having a 100-in. cylinder with 14-in. stroke. It draws about 360 gallons of water at a stroke, and can be made to give five strokes per minute. The drawing-engines are respectively of 50-horse power and 24-horse power, both being 5-feet stroke. Some 300 or 400 yards from the colliery just noticed there is a second, having a winding, pumping, and up-cast shaft. The cages are single-decked, but we understood that new machinery was about to be put down, and that double-decked cages will also be adopted. At the different pits a large tonnage of coal of good quality is raised, and what is not required for the furnaces, and for being converted into coke, is at once sent away either by water or rail. The concern belongs to Messrs. Lancaster, Taylor, and Parks, who find employment for a very large body of workmen.

There is every appearance that Mostyn will become one of the most important centres of the iron trade in North Wales, seeing that the original plan for erecting some seven or eight furnaces, if not more, is likely to be carried out.

SILVER MINING IN AMERICA.

If we would search for the precious metals, we should do so where the indications of Nature most directly point. Their natural neighbourhood is that of quartz, which has an igneous or volcanic origin. The value of a vein depends much upon its nature—whether it be a rent upon the earth's surface filled with ore, or if it be produced directly from an injection by expansive force below. If its formation is igneous, it is most valuable, as its dimensions and richness increase with its depth. We have the authority of the most eminent geologists and metallurgists for asserting that the Rocky Mountains are the legitimate localities for true gold and silver bearing ores. Vast and immense upheavals, they exhibit the true Plutonic ores in such profusion, such inexhaustible quantity, as to almost challenge our belief. The silver fields now discovered and opened in Nevada, Utah, and Colorado are apparently, in prominence and value, beyond any known in the world, and the results that will be realised there within the next few years will constitute an epoch in the history of silver mining. The wealth of the mines of Mexico is historic. We are informed by Humboldt that the yield of the Mexican mines since the Conquest to 1803 had been 405,590,400*l.* The registered coinage of the Mint of Mexico from the year 1733 to 1860 shows 348,314,775*l.* When we remember that the royalty to the King of Spain (to whom until the commencement of the nineteenth century the Mexican States paid tribute) was one-fifth, or 20 per cent., of the yield, and take into consideration the royal monopoly of quicksilver and gunpowder, the results seem astonishing. The Mexican method of mining was crude and simple. The ore, as well as the water from the bottom of the shaft, was generally brought to the surface upon the shoulders of *teneteros* (carriers) over ladders. The following registered yields of a few Mexican mines may be interesting to the reader:—

Biscaina vein	£3,268,320
Santa Anita vein	4,269,442
Valencia vein	6,362,699
Rayas vein	17,084,203
Veta Madra vein	45,187,167

The Pavellon vein, when first opened, was said to have produced 4000*l.* per day for five years, when a torrent of water from the mountains filled its shafts, and swept away the improvements. It was opened again, and for the succeeding 10 years yielded 12,000,000*l.*, when it was again abandoned in 1696, and not opened again until 1787, when it was vigorously worked for eight months, yielding in that time 2,500,000*l.*

The different members of the noted Fagoaga family are estimated to have received during 50 years working of two veins over 3,200,000*l.* in profits. The extreme northern mines of Durango and Chihuahua have been proven as vastly richer than those of the interior, referred to above. It is upon the records of Mexico that one Senor Zambrano, proprietor of two mines at San Dimas, Durango, paid as the king's fifth upon the silver raised from the two mines, from 1783 to 1807, the sum of 2,100,000*l.* The Carmen vein, north of Durango, in the State of Chihuahua, among the mines of Batopolis, has produced enormous yields of silver. From this vein three masses of pure malleable silver were taken, weighing collectively 870 lbs. The mines of Santa Eulalia, in the same State, have proved by the richness of their ores the superiority of the northern mines of Mexico over those of the interior and southern part. The registered yield of the mines of Santa Eulalia from 1705 to 1737 was 11,191,950*l.*; from 1737 to 1791 the yield exceeded 9,000,000*l.*

The report of Mr. Glennie, an intelligent English traveller, made in 1824 and 1825, confirms the good reputation of the northern mines of Mexico, after making numerous excursions among them. The result of an exploring expedition by some Mexican buscones (searchers) in the commencement of the eighteenth century will illustrate the wealth of that region. Upon their return they brought most wonderful accounts of richness, and in proof 4033 lbs. of pure silver, one mass of which alone weighed 108 arrobas, or 2700 lbs.—the largest mass of silver ever found in the world. The fact is well substantiated by record.

The following extract from the report to the English Government by H. G. Ward, Chargé d'Affairs to Mexico, may not be so uninteresting in view of the developments of the silver regions of Nevada, Utah, and Colorado. The report was published in the year 1827, for the benefit of English capitalists:—

"The hitherto unexplored regions in the north of Mexico contain mineral resources which, as discoveries proceed, are likely to make the future produce of the country infinitely exceed the amount that has been hitherto drawn from the (comparatively) poorer districts of the south. The specimens which I have seen of the ores extracted from about 36° north lattitude almost induce one to adopt the theory that the proportion of silver contained in the ores increases as you advance north, a theory which is generally believed at present in Mexico, and which is certainly confirmed by the superiority of all the northern ores to those of the richest districts in the south."

The richest silver mines of the world are those of high elevation. It has been the experience in Mexico, is the experience in the United States, and it is a well-known fact that the mines of Great Potosi, which have produced over 200,000,000*l.*, are worked at a height exceeding that of Mont Blanc. Those of Nevada, Utah, and Colorado are at an elevation of from 8000 to 10,000 ft. above the level of the sea, yet in the immediate vicinity of most fertile parts unfailing streams and thick woods.

It is only within the present generation that the people of the United States have entered upon the development of their magnificent precious metal domain. Already the results are most astounding. The yield for the present year is fixed at 20,000,000*l.*, the vitalising and enriching effect of which upon the commerce of the world will be incalculable. One vein, the Comstock of Nevada, has yielded in less than 13 years 25,000,000*l.* Several veins in Colorado have yielded more than 1,000,000*l.*

Now that English capital and American enterprise are combining to unearth these treasures results that will eclipse all past efforts may be looked for, and mining for precious metals—in America at least—will take rank as being not only safe, but profitable beyond all other departments of business. Prudence, and the intelligence required for any other business, are alone required.

GOLD MINING IN COLORADO.

Sir,—Very nearly all the company organisations formed prior to 1865 failed, as has been stated, financially—none were profitable. The local effect of these misadventures could be seen in the closing up of mines and mills, and the compulsory migration of miners and labourers. Those at a distance very naturally condemned the mines as poor, and the ore as intractible. This, for a short explanation, was satisfactory, whilst it answered most admirably as an apology to the friends of those who had made investments. Without further investigation this statement was accepted throughout the East, and in mining centres abroad, whereby the condemnation of Colorado mines and mining became well nigh universal. Had the country been benefited by the vast sums expended there would have been some outcome from the disaster. Unfortunately, a very small portion was charged to development, to sinking, drifting, or tunneling, and none to a successful mode and the proper machinery for beneficiating the ores. Mining, and the appliances for economical mining, were almost wholly neglected. In lieu thereof many magificent but ill-advised mills were erected, at a cost of from 20,000*l.* to 50,000*l.*, filled with machinery, upon which as high as 120*l.* freight per ton was paid for transportation across the plains. This was very expensive for engines, boilers, and stamps machinery. Similar freight is landed now for 16*l.* per ton. Such constructions have cost over 1,000,000*l.*, yet but few of them have been practically employed, and none of them with profit by their original owners.

Recently, public opinion east of the Rocky Mountains has undergone a change, in well-informed circles, with respect to the causes of these first failures in Colorado. Neither the mines nor the ores are longer held responsible. The sturdy progress of the Territory, the growth of settlements, the completion of 400 miles of railroad within her limits, and the active building of 400 miles of extensions and new lines, together with the constant discovery of new and valuable mining districts, serve to repel the charges hitherto made and believed, with an emphasis which is quite irresistible. It is acknowledged that all of this material progress is the outcome of the mineral wealth in the mountains, for Colorado can ship nothing east or west except *bullion, ores,* or *matt.* She is the purchaser of everything but the products of agriculture; the mineral wealth of the mining districts, therefore, furnishes the motives and the means of settlement to 40,000 inhabitants, rapidly augmenting. Had the mines of the Rocky Mountains proved to be worthless civilisation could not have bounded 600 miles westward and beyond its utmost verge, and there establish firmly and extensively the substructure of an empire territorially greater than the area of all the British Isles.

But the restoration of confidence has not gone to the extent of making a market in the East for Colorado mines. Capital is too tender-footed, too sensitive and suspicious, to venture again in such thorny ways, whilst the same ignorance of mining affairs exists which so recently caused such recklesness, extravagance, and speculation. Nor will confidence in this respect be restored until better informed investors avail themselves of the immense progress made within the last four or five years, and by stepping in now gather profits from fields so expensively tilled by American capital before the worth of the mines was understood.

The pioneer miners and prospectors who started the first mills, arastres, &c., did everything under the pressure of "haste to make a fortune," which would not brook the keeping of accounts or records indicating the value of the ore. When the eastern companies failed they had been in operation too briefly to establish anything of the kind. Since then, nearly all the milling has been done by custom work, much of it in leased mills for lessees of mines. It was not to the interest of these men to keep or publish a statement of this nature. Hence, up to the present moment, there is no very extended means of establishing the average value of the ores of Gilpin county from working quantities raised from a number of mines continuously for some time. Perhaps I have given more time to this question than anyone else, and have at hand a sufficient amount of detail to warrant a statement which can be regarded as sufficiently exact.

Albert Reichenecker, a graduate of the German schools and practice, after giving the subject a searching analysis, states that the ores must be worth $27·75 per ton to pay expenses in the mills, and hence more than that if a profit is made. He says:—

"The proportion of gold saved on the plates and tables varies in a well constructed mill between 30 and 50 per cent. of the whole amount of gold in the quartz, and may average 40 per cent.

Extraction from mine	$4·60
Interest on plant	·40
Cost of management	·40
Transportation (by team)	1·00
Cost of quartz at mill	$ 6·40
Crushing and amalgamation	4·70
Working cost per ton	$ 11·10

This sum represents the lowest yield which allows a mine to be worked when producing ore worth by assay $27·75 per ton."

Mr. Reichenecker classifies and values the ore, as follows:—

Value of selected ore, 1st, class.	
4·5 ozs. gold, at $20·67 per oz.	$ 93·00
18·1 ozs. silver, at $1·30 per oz.	23·50
9 per cent. copper, $2 per cent.	18·00 = $ 134·50
Value of mill ore, 1st class.	
1·4 oz. gold, at $20·67 per oz.	$ 28·94
5·6 ozs. silver, at $1·30 per oz.	7·28
2·8 per cent. copper, $2 per cent.	5·60 = $ 41·82
Value of mill ore, 2nd class.	
1 oz. gold, at $20·67 per oz.	$ 20·67
4·1 ozs. silver, at $1·30 per oz.	5·33
2 per cent. copper, $2 per cent.	4·00 = $ 30·00

The valuable little work from which this is quoted was published in Prague, 1871.

I have taken from the official records, kept by the Territorial Assayer, the details of which the following is a summary:—

Assays.	Samples of 1st class ore.	
34 lots from Gregory district, average per ton		$ 169·30
32 ,,	Nevada ,, ,, ,,	127·92
19 ,,	Russell ,, ,, ,,	112·18
9 ,,	Illinois C. ,, ,, ,,	126·96
8 ,,	Central ,, ,, ,,	86·05
102 lots of ore, samplings of thousands of tons, averaged		$ 124·48

No estimate for copper.

[Over.

From a private assayer's books 104 lots averaged $147·26.
The average of 208 lots $135·87 per ton, 1st class.

Samples of mill ore.

277 lots from same districts averaged.....$ 33·86
151 lots from private assayer's books averaged ..... 46·42
Average of 428 samples, $40·14 per ton mill ore.

These mill ore assays were made of samples taken from 282 mines at every variety of depth and for every kind of purpose, the most of them occurring in active working, for testing the value of particular ores as reached, inclusive of every sample assayed, some of them worthless as ores. The assays were made during two years :—

41 samples from 41 mines, by agents and millmen, averaged $33·95 per ton.
78 lots of ore bought for the chlorination works, the second class of mill ore taken out, averaged per ton $105·09.

The samples for this last, and for the 1st class ore were taken for the purpose of sale, as at Swansea, and therefore represent the value of such ores correctly. In the two years these samples represent several thousands of tons.

During the summer of 1870, 25 tons were taken from six mines in various lots, for the purpose of testing a concentrating machine. The ore was mill ore of the poorest class, the 1st class having been closely selected out. The average by assay was $27·60 per ton.

An operator more particular than ordinary weighed a lot of ore as fed to his mill until 850 tons had been treated. Samples were taken for an average of value. The result was $27·07 per ton. The mill saved a trifle less than 40 per. cent., and the operator lost 50 cents per ton by the mill—a very close verification of Mr. Reichenecker's statement above quoted. From one mine, during two years, about 10,000 tons of ore were taken, the 1st class selected out and the other milled.

The yield of the mill was per ton.....$ 13·17
The value of tailings in pile (estimated as original ore)..... 15·00
Estimated loss by flow of mill, per ton of ore ..... 5·00
Value of original ore per ton.....$ 33·17

In this instance $13·17 is about 40 per cent., but the operator lost money, the 1st class ore being pledged for the use of the mine. His profits went off at the tail of the mill, not less than 15 per cent., irrecoverably, in the flow of the water—perhaps leaving 45 per cent. yet in the pile of tailings, which were stopped.

RECAPITULATION.

Reichenecker's, average $41·82 and $30·00 = ...$ 35·91
Average of 428 assays from 282 mines ..... 40·14
41 samples from 41 mines ..... 33·95
25 tons from six mines, in lots for concentration ..... 27·60
860 tons from the workings of one mine 27 07
10,000 tons from working one mine..... 33·17
General average per ton of mill ore .....$ 33·00

Adding for the 1st class ore (selected out) the average of $5, we then have $38 as the value of the average ores raised in Gilpin county. Copper not included.

Australian yield per ton—from Phillips.

319·695 tons, at per ton ..$ 11·14 | 61·075 tons, at per ton ..$ 12·04
*85·521 " " .. 6·52 | 25·519 " " .. 37·44
Average per ton $16·78.

* Daily assays of the second lot during 18 months showed a loss of only $1·56 per ton in the tailings.

1,760,050 tons at Morro Velho, Brazil, averaged.....$ 8·20
30 mines in California, including the richest ..... 23·50
15,944 tons Eureka, Nevada County, in 1868 ..... 28·36

The average for Colorado is one obtained from facts occurring in the progress of the country, it is not the result of calculations upon data furnished for that purpose, hence it is deemed reliable—a close approximation of the truth.—*Central City, April* 17. B.

COAL MINING AT CAPE BRETON.

SIR,—It appears that considerable progress is being made in the development of the coal fields in the northern part of Cape Breton, where for a considerable time past sinking operations have been pushed forward with considerable energy. Mr. Wilson (brother of Mr. J. Wilson, the viewer of the Oaks Collieries, Barnsley) has recently arrived near to the port of Sydney, to superintend the sinking of the Sydney Mines; and he has just forwarded some interesting particulars as to what is being done. It appears that in sinking some very large feeders of water are met with. He states that there are two pits being sunk at this place and a staple. The pits were sunk to a depth of 40 fms., when a strong feeder of salt water was met with, to which there was a drill-hole; but the water came up to such an extent that they left it running, and so had to keep the engine going night and day pumping the water. Mr. Wilson states that he sunk the second pit down to the same feeder, but kept a hole ahead of the sinking, and when the water was tapped a plug was put in, and partly stopped it. The services of a diver were than obtained, who, along with Mr. Wilson, went down in about 20 ft. of water, and effectually stopped it, so that at present they have only the top feeder to encounter, which gives about 66 gallons per minute. One pit is 11 ft. in diameter, and other 13 ft., and the staple 6 ft. 6 in. The top water will have to be tubbed, most of which has to be sent from England. By plugging the water they have been able to knock off four banksmen, three firemen, and four engineemen. The pits alluded to were started in April, 1867, just five years ago; but the water could not be mastered, as the sinkings are only about 200 yards from the sea, whilst the coal they are working lies under it. At Sydney they are making a harbour for shipping coal, and there is water sufficient for vessels of almost any burden. Upwards of 60 men are now engaged in sinking the Sydney Mines, which are the property of a London company. About a mile distant there is another pit, belonging to the same company, who have a very large tract of land, of which Mr. Greenwell is the manager. Some distance from the Sydney pits are the Lingem and the Reserve Mines, where they are driving out, and everything is on a scale for doing a large business. About a mile from the last-named place is another pit being sunk to the coal, so that before long that particular district will be drawing a large tonnage of coal. At other places new and powerful pumping machinery is being put down, as the water appears to be the great thing to be encountered. There appears to be plenty of work for miners at good wages; but the climate does not seem to be very inviting, for Mr. Wilson states that on March 26 the snow on the ground was from 2 to 7 ft. thick. From the extensive mining operations going on in several parts of the island, which contains 3120 square miles, Cape Breton will become a most important country, with every facility for shipping from several excellent ports to Canada and Nova Scotia, from the latter of which it is only separated by a strait, 20 miles in length and a mile wide, known as the Cut of Canso. J. R.

REPORT ON A CALIFORNIAN GOLD MINE BY THE MINING BUREAU OF THE PACIFIC COAST.

SIR,—A new case of examination of a Californian Gold Mine has just been referred to the Mining Bureau by a San Francisco firm, who have undertaken the sale of that property to an English company. The following is a condensed report upon the mine, which has been examined in my presence by the engineer of the Bureau, whose detailed report, accompanied by maps, has just been handed to the applicant, after having been approved by the President and board of directors :—

The mine is called Knox and Boyle Quartz Gold Mine, and is owned by Messrs. E. Green, D. Taft, and A. B. Preston, of Jamestown, Tuolumne County, California; it is situated about two miles south of the village of Jamestown, and four miles west of Sonora, county seat of Tuolomne County, California. There are a vast number of quartz lodes traversing the belt of the country, but little real development in quartz mining has been made as yet in this portion of the country. The mine can be reached from San Francisco by the Central Pacific Railroad to Stockton, 90 miles, thence by the Copperopols and Stockton Railroad to Milton, and thence by stage to Jamestown, 32 miles. The vein has an inclination of about 60° to the east, with a width varying from a few inches to nearly 2 feet, carrying free gold, and but few sulphurets. The owners of the mine claim 1200 feet on the lode from north to south, with a strip of 150 feet wide upon each side, and they are in full possession of the same. The mine is worked by shaft, incline tunnels, and three levels or drifts. There is a 10-stamp mill, situated about 800 feet from the shaft, and connected therewith by a tramway, which conveys the quartz from the mine to the batteries. The main building is 20 by 28 feet, built of white pine lumber, one story in height, and contains in addition to the two batteries of five stamps each two Mexican *arrastas* for grinding quartz, driven by the same power; also two self-acting feeders that deliver the quartz to the batteries. The machinery at the mill is driven by a water-wheel 32 feet in diameter, with 3 ft. 3 in. on the face, and capable of driving an additional battery of a few stamps, with but little additional cost. The water is conveyed to the mill by a flume of nearly 600 ft. in length, 22 in. wide by 16 in. deep; the present cost of running the mill is $100 per month, and is furnished by a ditch company at that price. There are hoisting works at the mouth of the shaft, consisting of a steam-engine of 15-horse power, with a tubular boiler and steam-drum.

The present owners of the mine have presented their books, and A. B. Preston's (one of the owners) sworn statement, from which it results that since the mine has been in their possession 686 tons of quartz were taken out and milled, which returned $19,418 62, or $28·3 per ton; this would leave a net profit of nearly $20 per ton, the cost of mining and milling being estimated at $9 per ton. Not more than six tons a-day have been so far milled, although the owners claim that eight could have been milled, but without giving the same satisfactory returns in proportion. There is a tunnel 340 feet long, driven into the hill at a right angle of the vein, and it is expected that if continued 50 feet further, at a cost of (say) $5 per foot, the lode would be cut at more than 160 feet below the surface. This would add materially to the supply of quartz from the mine, and save the expense of hoisting incurred by the present working. The title to the Knox and Boyle Mine is in the name of E. Green, A. B. Preston, and D. Taft, who have possession, and hold it under the quartz mining laws of Tuolumne County, now in full force, having been recognised by the Supreme Court of California.

The above are the main features of the mine. The report of the Bureau upon that property has been made in this present case, at the request of the intended vendor, and it should be considered by the intended purchasers as perfectly neutral, or rather as a photographic description of the mine. In previous cases, such as the examination of the Independence Gold Mine, situated in Sierra County (California), and the Crescent Gold Mine, situated in Plumas County (California), the application for examination having been made by the intended purchasers. The Bureau had to give its advice upon the merits of these two properties, which were found valuable, and pronounced desirable as an investment. In the case of the Knox and Boyle Mine, the report of the Bureau submits simply the material description of the property, leaving to the intended purchasers a perfect freedom of action and judgment according to their own views and interests.

In conclusion, I would say that the reports of the Bureau upon the Independence and Crescent Mines were favourable, while that upon the Knox and Boyle must be considered as *neutral*.

Sacramento, April 17. J. BERTON, President.

ON STAMPING TIN ORE.

SIR,—Since my return from Cornwall I have been busy in trying experiments, and getting up three or four new models of my improved plan of stamping, all of which fully tend to prove my theory is right in practice, and can be carried out practicably for half the money, and do more, and consume not above one-half the usual quantity of coals as compared with the old stamps. I am open to discuss with the most celebrated engineers of the present day on its merits, let the driving power be what it may. In a few weeks I shall be ready to lay down my plan for erecting one, or even to carry out one at my own cost.—36, *Hyde-street, New-cross.* NICHOLAS ENNOR.

[In Mr. Ennor's letter, in the Supplement to last week's Journal, for "Mr. Lane, an engineer," read "Mr. Loam"—who admitted that Mr. Ennor had made a material improvement on the Cornish stamps.]

THE "MARKET VALUE" OF TIN MINES.

SIR,—As a contrast to the selling prices of many of our most valuable tin mines, I have extracted the following :—

		Price.	Selling for.
5080	New Rosewarne	£ 10½	£ 52,500
1200	New W. Rosewarne	11	13,200
1000	North Rosewarne	8½	8,500
1200	Old Bottle Hill	16½	19,800
1000	Treleigh Wood.....	190	190,000
2000	West Lucy	3	6,000
1000	Wheal Lucy	8¾	8,750
6000	Peevor.....	4¾	28,500
8000	New Treleigh Wood	2	16,000
1000	Treleigh Wood United.....	12	12,000
8000	North Treleigh Wood	2	16,000
			£371,250

or 11 mines selling for (?) nearly 400,000*l.*; and it is said scarcely a ton of tin has been sold from any one of them. Comment is needless.

A MINER.

MINING REGULATION—CERTIFICATED MANAGERS.

SIR,—My letter which appeared in the Supplement to the Journal of April 13, about "Responsible Managers," was for the purpose of showing how such laws work in other countries, and thereby allay the feeling of opposition to this clause of Mr. Bruce's Bill. The instance I quoted was a perfectly *exceptional one*, and would, I dare say, now not be granted; at the same time it shows that the "Responsible Manager" is not held culpable for accidents beyond his control, so long as he does not permit any infringement of the laws, &c. I feel confident "G." does not mean to say that an intelligent man will become less so by education. If I have pained him by using the word "ridiculous," I regret it, but think it would be little else if he thought any such thing. I would regret exceedingly to see such men as he mentioned prevented from attaining managerships. I am certain, however, that the party mentioned would have had no difficulty in obtaining the requisite certificate when he required it, as the examinations must be of a practical character, with a certain amount of theoretical knowledge. Purely theoretical managers would soon prove the measure to be at fault, as can readily be proved by examining a pupil of the School of Mines, after he has attended the mining course, on practical points, taking for granted he has never seen a mine. I well remember being myself much amused at some of the ideas expressed when attending the courses there. NITRAM.

May 2.

PROFESSIONAL MINE REPORTERS.

SIR,—The few remarks which passed between Major Sharpe and Mr. Hilary Bauerman, at the meeting of the Imperial Ottoman Mining Company, reported in last week's *Mining Journal*, show how little confidence men of business place upon the reports of professional mine inspectors, especially when scientific attainments constitute their principal qualification. In this case it was admitted that the results hitherto obtained by the company agreed very well with Mr. Bauerman's opinion of the value of the mine—that is to say, the mine has not hitherto been as profitable as the Cornishmen who inspected it predicted it would be; but it must not be forgotten that the company have only deepened the mine 6 or 8 fms., and that even this small amount of work has yielded at least some return to the company. It is much to be regretted that Mr. Bauerman's opinion should have been received with so little respect, because he is almost the first Royal School of Mines student who has been entrusted with the inspection of mines for the guidance of British capitalists, and it would have brought some credit to the School to have one of its students recognised as a reliable authority upon the value of mining property.

Mr. Bauerman was evidently in error in not at once accepting the Chairman's challenge by stating where his practical experience had been acquired; yet all the information he gave was that he had seen a similar mine whilst at La Scala. The shareholders are evidently dissatisfied because Mr. Bauerman did not give them a favourable report; they have in this followed the example of nine persons out of ten. They have asked an opinion, not for the purpose of getting data to guide them, but to obtain an additional statement confirming their pre-conceived notions. I have no means of knowing whether the Pelidli mines have true lodes or bunches only, and as so little has been done, I should not like to condemn a reporter because he calls them bunches. Indeed, business men care little whether the lead is in lodes or bunches, so long as it returns a good profit upon the outlay; and I believe I have often read in mine reports that the lode is bunchy at present, but likely to become regular in depth. I always considered the Pelidli mines a good speculation, but I never heard until Thursday whether the lodes were in limestone, near greenstone dykes, or in any other formation, and I expect the shareholders generally cared little more where they were than I did. We had the evidence of Capt. Pope, Capt. Vivian, and Capt. Fishback, that the mines were likely to prove profitable, and acted accordingly.

Now, since the meeting I have looked at the Journal to ascertain what mines these gentlemen were connected with, and I find that Capt. Pope's mine, Wheal Basset, is a copper mine, and Crenver and Wheal Abraham a copper, tin, and mundic mine. It is rather like locking the stable door after the horse is stolen to complain now; but it seems to me that if we cannot rely upon Mr. Bauerman because he has had no practical experience, we were equally unwise in relying upon copper and tin miners to report upon lead. Depend upon it, the whole system of relying upon the reports of professional mine reporters is wrong, and practical agents are no more reliable than scientific students. The only method of obtaining a report in which confidence can be placed is either to employ mine agents constantly employed in the district in which the mine is situated; or, where this is unpracticable, to select mine agents employed in mines which are wrought in similar geological formations. I trust the Pelidli mines will not be abandoned, as we certainly have not yet given them a fair trial, nor had them inspected by men likely to understand them.

May 6. N. N.

A GLIMPSE INTO THE FUTURE.

SIR,—The state of the Bank returns indicate an early advance in the value of money. The position of this country at the present time is exceptional, and the ordinary rules practised by the directors of the Bank in regulating the rate of discount are wholly inapplicable to the exigencies of the times. Trade has greatly advanced, and continues daily to augment, while prices of commodities have rapidly swollen till speculation strengthens the movement, and the cautious capitalist loosens the strings of his purse in advancing money, with slight margins in his favour, on almost every description of goods and property. All this tends to absorb Bank notes, and to withdraw coin from the Bank of England, which alone at this period supplies the wants of the world. France, which formerly competed with England in the bullion market, is crippled beyond a hope of assisting others. Germany may at any moment draw largely upon England, and there is a large amount of foreign capital invested in England that will be withdrawn so soon as French affairs assume even an approach to settled stability, for it must be evident to all that there exists in France many and valuable investments that are all but commercially worthless which, as soon as the conqueror quits the soil, and the Government becomes united and progressive, will afford opportunity for gains to those who take advantage of the depression all but unexampled in modern times. A larger proportionate reserve ought to be kept against these contingencies than in ordinary times, and I shall be greatly mistaken if money does not become dearer, and advance materially as the year progresses. There is an uncertainty allied with our money operations that ought to foster caution. What is 21,555,455*l.* of bullion to regulate the expanding trade of the world, feverish and rampant speculation at home and in the colonies—with the fact staring us in the face that no other country can or will compete with us in the bullion market. The reserve at the Bank of England is only 10,633,000*l.*, with commitments of 29,579,000*l.* Of course, the Bank holds securities which daily become matured, yet it is evident that its resources are closely absorbed in the trade and commerce of the nation.

What will Italy do to recover her financial equilibrium? *It is* certain that had France mastered Germany, instead of receiving such a severe castigation, an alliance between the two countries would have taken place. The foreign debt of Italy is very considerable, and her credit low in the English market; will that country continue to pay her dividends when she cannot borrow money below 10 per cent. interest? Turkey is also obliged to borrow at 9 to 10 per cent. interest, yet there are manifest signs of progress and honour in the Sultan's cabinet, which constitute an element of confidence in the English public, and there appears in the vista strong probabilities of happier days for that country, and higher prices for the securities held by our capitalists. Again, Egyptian bonds yield high rates of interest to investors, while the state of that province steadily progresses her reources are soundly becoming developed, whilst her revenue must augment under the firm grip and judicious rule of the Khedive.

The dividend tin mines of Cornwall are very deservedly in good request, and great has been the enhanced value of shares in the market. The extended volume of dealers and shareholders attest the widely spread appreciation this discription of property is now regarded with by the general public. Amongst others we have now in the Dividend List—

Boscaswell Downs, selling for £		75,000	Providence,	selling for £	37,500
Botallack,	,,	45,000	Rosewall Hill,	,,	7,000
Castle-an-Dinas,	,,	11,000	South Carn Brea,	,,	27,500
Carn Brea,	,,	175,000	South Condurrow,	,,	48,000
Cook's Kitchen,	,,	130,000	Spearne Moor,	,,	4,500
Ding Dong,	,,	6,500	St. Ives Consols,	,,	45,000
Dolcoath,	,,	430,000	St. Just Amalg.,	,,	
East Pool,	,,	120,000	Terras,	,,	
East Wheal Lovell,	,,	32,500	Tincroft,	,,	450,000
Great Wheal Vor,	,,	65,000	Trumpet Consols,	,,	70,000
New Pembroke,	,,	32,500	West Wh. Frances,	,,	52,000
North Levant,	,,	32,500	Wh. Kitty (St. Agnes),	,,	70,000
Pendarves United,	,,	10,000	,, (Uny Lel.),	,,	
Penhalls,	,,	20,000	Wheal Margaret,	,,	18,000
Phœnix,	,,		Wheal Owles,	,,	40,000
Polberrow,	,,		Wheal Uny,	,,	52,500
Poldice,	,,				

In addition to the above mines, there are others especially worth attention, as, for instance, South Crofty, Wheal Mount, East Basset, Lovell, New Rosewarne, North Pool, North Roskear, Penstruthal, Par Consols, West Basset, West Jewell, West Tolgus, Wheal Lucy, Wheal Buller, and various others. R. TREDINNICK,
Consulting Mining Engineer.

3, *Crown-court, Threadneedle-street, London, May* 6.

"WHAT TO SELECT—WHAT TO AVOID"—No. XX.

SIR,—Some of your correspondents would have us believe that since the existing condition of the metal markets is altogether exceptional, its future is precarious and unstable; but those who entertain this opinion cannot have compared the present with the past, nor carefully reviewed the various and increasing causes which have brought about a gradually augmenting demand for all descriptions of metals.

The writer is old enough to recollect the time when the disuse of copper for vessels' bottoms was regarded as a fatal blow to anything like a remunerative value ever again being obtained for that metal; but now incomparably larger and increasing quantities are employed for purposes not then known; and this must continue as the world's commerce expands, which it is sure to do proportionately with the extension of civilisation. So far from there being any downward reaction in the price of copper, every statistical fact clearly indicates a further important advance. Apart from any other consideration, the condition of the Indian market is of itself sufficient to establish higher values, and when this is added to the significant fact that shipments from Australia and Japan are made to this country (where an enormous demand exists fully equal to any forthcoming supplies) instead of India, as is usually the case at this season of the year, it needs no special prophetic gift to foreshadow the future of the copper market.

Tin has been, and must continue to be, favourably affected as to value, both in point of supply and consumption. The recent serious revolt among the Chinese labourers at the Banca Mines cannot fail to very materially reduce for some considerable length of time the supplies from this generally fertile source. The supplies are short, and the demand is great. The tin-plate trade is in an active and healthy condition, which may always be accepted as a pretty safe index of the value of the raw material.

The market for lead and spelter is also in a very encouraging condition; prices are ruling high, and there is nothing whatever to indicate a reaction.

It is with extreme personal satisfaction that the writer is able to record these facts, because at the beginning of the year he pointed out that "to the judicious investor 1872 should prove the most profitable on record, such brilliant prospects being unknown in the history of mining, which was unquestionably entering upon a new career of unprecedented success, and results would establish it more firmly than heretofore as the most remunerative security in which capital could be invested."

At the present time, too, the writer will probably be pardoned if he recapitulates what he put forth some time since concerning the attitude investors should assume in regard to the numerous companies introduced to the public. Dutifully to themselves, they should absolutely refuse to accept an interest in any mine the vendors of which are not prepared to take paid-up shares for that which they offer for sale, leaving the subscribed capital to be appropriated to its legitimate use—development. Vendors having great confidence in the value of that which they desire to vend, such an equitable arrangement cannot be otherwise than to their immediate interest, by enhancing the commercial (no less than the marketable) value of their stake in the enterprise; while those who supply "the sinews of

war" would have the unqualified satisfaction of knowing that their capital is to be expended in a direction in the successful issue of which both vendors and vendees have one common interest.

These suggestions are especially applicable at the present time, and should be borne in mind by all who contemplate acquiring an interest in newly-introduced mines. The writer designedly avoids mentioning any particular mine, home or foreign, that has not been purchased upon such terms, his present purpose being to endeavour to establish a wholesome principle, rather than make invidious comparisons. Do not let me be misunderstood. Should a mine possess a defined amount of discovered ore—reserves—a fair proportion of its value (as a commercial commodity) may be paid for it in actual cash, consistently with the true interests of the shareholders; but when, as is too often the case, nearly the whole of the subscribed capital is diverted from its legitimate channel, passing into the pockets of the vendors, the mine cannot possibly be fairly tested, nor its resources developed—this is one of the fruitful causes of what are regarded as mine-failures.

NEW WHEAL LOVELL.—Since attention was last drawn to this mine a considerable improvement has taken place at one of its most important points of development, in addition to which a new lode has been discovered, adding greatly to the future value of the property; one point of operation alone is valued at 50*l.* per fathom. Those who have a greater interest in depreciating the marketable value of the shares than in the permanent success of the mine have, to suit their own ends, pretended to attach much importance to the temporary falling off in value of the lode in the shaft. Shareholders should know that the lode has again improved, and that the developments at the eastern portion of the mine are such as to warrant the opinion, on the part of the most experienced authorities in the district, that New Lovell is about entering upon a career of prosperity second to nothing yet known in the locality.

WEST GOGINAN.—A report has been received to the effect that a course of ore has been discovered of sufficient value to yield returns to meet the whole of the cost of development. The locality in which this mine is situated is one of the best in the well-known silver-lead producing district of Cardiganshire; and if the reports of the managers of the surrounding rich mines, as to the value and capabilities of West Goginan, are to be accepted as in any way trustworthy, this mine is destined upon development to become highly productive. A large amount of business has been done upon the Stock Exchange in the shares, at 1¾ to 2 prem. (1*l.* paid).

Pinner's Hall, Old Broad-street. FREDK. WM. MANSELL.

EAST LLANGYNOG MINE REPORT.

SIR,—My attention has been arrested by several points in the report presented by the directors of this mine, and inserted in the Supplement to last week's Journal. If that portion of it headed "Agent's Report" is not a very glowing and detailed one, compensation is attempted by the remarks of the Chairman and others. But whether he spoke from ignorance, or otherwise, I cannot say; yet this I know, that some of his remarks are not quite correct, and do not represent the true state of things in the mine. I agree with him that the shareholders have a "good mine," that is, if it be properly developed by good plans. But I must take exception most emphatically to his remarks when he states that the credit of developing the mine, and the designs for that object, are the work of their present agent. Mr. Pascoe has only been in "agent's shoes" there since August, 1871, and the laying out of the plans for developing that mine is wholly and entirely that of another, and not his. Let every man have his just and proper due. But, by the way, there is a blunder in the report which a practical miner would not make in reporting. It says, "The chief operations have been confined to developing the mine, in the accomplishment of which several valuable lodes have been cut." To a non-scientific miner this may sound as all very correct; but it should be "bunches of ore," not "lodes." I say emphatically, in contradiction to the remarks made at the meeting and the report, that there has been nothing new developed in that mine, that the levels were all opened before this agent's time, that the same shoot of ore as now worked on was previously discovered, and that the plans now working upon are wholly those of the previous agent. The "incline" and "cage" on the top were laid out and worked for many months before the East Llangynog Company existed. There may have been some alterations in laying out the iron rails, &c. The ore in No. 1 level, over the slide, was cut previous to his time, and a rise put up and stopes opened. The winze was sunk 12 fms. 4 ft. out of the 20 fms. therein stated. In the No. 2 level, 15 fm. 3 ft. out of the 20 ft. stated, were driven eastward in the course of ore. As these points and the Chairman's remarks affect myself, I ask you in justice both to myself and my friends to allow me to correct them.

In addition to the above brief remarks I challenge the whole report presented at the meeting as being very tame and shallow for works of such magnitude as are carried on at that mine. The large body of shareholders were entitled to have particulars as to progress made in the other parts of the mine. I will suggest a few things. What has become of the works of the middle or sun lode? Has that vanished? It would be interesting to have information as to how the "20 fms. of backs," stated to work upon in the 17 fm. drivage east in the winze are to be got from. What has become of the No. 3 level, and what has become of the end that was driving east on the north lode in No. 4, which was only 9½ fms. above the north level? Why not inform the shareholders about the work done in No. 2 old level, where it was reported to produce from 3 to 4 tons of ore per fathom? Some allusion should have been made to the lode in the back of No. 1 and the deep adit, and how does this look? &c. For a "general meeting" of shareholders, numbering 700, according to the report, something more would have been expected than was said. E. J. BURN,

Agent at the Craig-y-Mwyn Mine (now East Llangynog),
Oswestry, May 8. from July, 1869, to August, 1871.

EAST LLANGYNOG MINING COMPANY.

SIR,—On reading the report of the general meeting of the shareholders of the East Llangynog Mine in the Supplement to last week's Journal, I was particularly struck with the frank, outspoken remarks of Mr. J. Taylor on Mr. Endean's amendment; but I fail to discover any reason why the whole body of shareholders should be kept in ignorance month after month merely because Mr. Endean has taken unfair advantage of information he had received to issue exaggerated reports respecting the mine. There are few persons, I imagine, who would give implicit credence to the legion of circulars which are disseminated throughout the country if they knew they could resort to information emanating from some person connected with the management of the mine, authorised to make it public. I am persuaded that the doing of that which has been left undone—viz., the insertion of a monthly, if not of a weekly report, no matter how brief, of the progress made in the *Mining Journal*—would materially enhance the interests of the property, and tend greatly to counteract the mischievious tendency of the numerous spurious circulars which have been so animadverted upon of late. Besides, is it just to the whole body of shareholders to shut them out from participating in the knowledge of whatever improvements may be effected till the next general meeting in Feb., 1873? I trow not. Let the directors furnish us with periodical reports of the work done; let them give us the light by which the truth may be discerned. In so doing they will frustrate the machinations and mar the prospects of those who forge falsehoods for their own personal aggrandisement to the injury of others. Æ.

Chippenham, May 7.

ERGLODD AND PENPOMPREN MINES.

SIR,—In reply to Mr. Edward Gledhill, I would say that I have been connected with the four mines he has named more than 30 years, and at a time when the smelters sometimes gave the assays with the prices offered, and that the assays for silver had been correctly given by me. If, therefore, Mr. Gledhill is particularly anxious to know why the ores did not bring a better price, I would recommend him to enquire the reason from the gentleman who purchased the ore at the price named by him. ABSALOM FRANCIS.

P.S.—I have just this moment glanced at the sale of last week in the *Mining Journal*, and instead of prices named by Mr. Gledhill ranging from 15*l.* to 17*l.* per ton, find Glogfach ore sold for 18*l.* 12*s.* So much for the veracity of Mr. E. Gledhill's statement.—*Aberystwith, May 6.* A. F.

TERRAS TIN—"CIRCULAR MINING."

SIR,—Mr. John Addison's latest example of Scotch logic is simply a wilful perversion of our statements. We never asserted that he had sold to us directly any shares, or received money from us, for we had declined his business in the middle of last December; but we did state that we had parted with our hard cash in exchange for a transfer and certificate duly executed by him for 500 shares, which the secretary, Mr. W. S. Pearce, affirms were transferred out of his name so long ago as Sept. 19. If Mr. Addison did duly transfer the 500 shares on Sept. 19, as stated by Mr. Pearse, then it appears to our southern ideas that he has been obtaining money under false pretences by giving another transfer, dated March 22, for the same shares. We are not disposed to admit that "the money advanced having been tendered back the whole transaction is closed." However, as this question will be tried before a proper tribunal, we have no wish to prejudge the case, or waste more time upon Mr. Addison. Still the question is worthy the serious attention of all shareholders, the rule being that upon the presentation of a transfer and certificate, or properly certified transfer, a cheque for the amount claimed must be given, or the vendor can immediately sell out the shares and recover any loss which may be thereby incurred. If, therefore, the certificate be worthless what protection is there for shareholders against frauds attempted by the unscrupulous?

We will, in your next impression, fully reply to the letter of Mr. C. M. Barston, of Edinburgh, which appeared in last week's *Mining Journal*, signed "One Thousand Shares."—*Bishopsgate, May 9.* W. MARLBOROUGH AND CO.

"TIME ON BARGAINS."

SIR,—*Apropos* of Mr. Ward's remarks on this system, I would remark that a bold instance of this dipping into futurity has come under my observation within the past month. A dealer in a mine in which Mr. Rosewarne is himself interested has undertaken to supply, something like twelve months on, some hundreds of shares at the market price, whatever it may be, at the expiration of that period. The price since the bargain was entered into has already gone up 10*s.* per share, and must inevitably go much higher.

Now, without entering at any length into the character of this transaction, it must be manifest to anyone, even though not initiated into the mysteries of share jobbing, that the object of this broker will be to exert his utmost during this twelve months to depreciate his neighbour's property, simply to extricate himself from an illegitimate transaction. There is, I believe, no law to prevent a man, if he is so constituted, from decrying any mining property he may happen to fix upon, the *bona fide* investor should, however, surely be afforded some kind of protection from the proclivities of this class of dealer. FAIRPLAY.

[For remainder of Original Correspondence see to-day's Journal.]

Meetings of Mining Companies.

THE EMMA SILVER MINING COMPANY.

A special general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday,

Mr. GEORGE ANDERSON, M.P., in the chair.

Mr. W. H. TOOKE (the secretary) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, from the notice you have heard read you will have gathered that the principal object of calling you together at this time was to meet Mr. Brydges Willyams, on his return from the United States; but I am exceedingly sorry to be obliged to announce that that is impossible, for Mr. Willyams's father died on Tuesday night, and it has, therefore, rendered it impossible for him to attend this meeting. I must, therefore, adjourn the meeting to a future day, for the purpose of hearing Mr. Willyams; and, in the meantime, we will give you all the satisfaction we possibly can as to the present state of the mine. We have a report from Prof. Silliman, which Mr. Willyams brought with him, and the secretary will read it. Very fortunately, to-day we have a very long letter from the mine, giving a complete account of all that has taken place, and alluding to the renewed snowstorms which they have had, and which, no doubt, most have seen noticed in the public prints, by which some mines in the district have suffered more severely than we have; and the Wellington Mine have lost their manager, who was killed in one of the snowslides. We have escaped serious damage, but it has tended to retard our progress. These weather delays, which I understand are entirely unprecedented this winter, have certainly completely upset the calculations of the directors. I do not think the directors can blame themselves for this at all, for if the thing never happened before it is impossible to foresee it would happen now. The consequence is that the large quantity of ore we stated in the prospectus that we expected to be able to take out of the mine, and send home to London during January and February, has been delayed, and the quantity arrived is not nearly so large as we expected it would be at this time; but, making fair allowance for these weather difficulties, I think we have every reason to be satisfied—more than satisfied—with everything which has taken place, and with our position and our future prospects. There is present, I believe, a gentleman who accompanied Mr. Willyams, and is in no way connected with the vendor, but is a mine owner in the same district, and I believe that gentleman will be happy to answer any questions connected with the mine; and I, also, shall be happy to answer any questions which any shareholder may wish to put. It is quite possible the shareholders may wish to address some questions, in consequence of the continuation of that system of persecution for stock-jobbing purposes to which this company has been made so long the victim. We have received information that there has been quite a conspiracy for the purpose of bearing down our stock. Parties are understood to have made large sales of the stock for delivery in May; they have been entirely disappointed in carrying out what they expected, and dragging down the price to par, and they are using most desperate efforts now to endeavour to carry their point. I have no doubt these efforts will be persisted in, and therefore shareholders may expect to receive a continuation of those extremely disinterested circulars which they have been receiving. (A laugh.) I only hope the shareholders will estimate them at their true value, and understand that those men who send out circulars signing themselves "Shareholders" would be very unlikely to send out a circular to damage their own property, and that they would be very unlikely to go to the expense of printing and distributing those circulars merely for the benefit of shareholders of whom they know nothing. (Cheers.) It is entirely done for the purpose of dragging down our stock, but I hope the shareholders will baffle them at every point, and, if so, they will be very severely hit before the end of this month. (Loud cheers). Mr. Willyams has written a letter from the Waterloo Hotel, Jermyn-street, which I will read.

The letter was read. In it Mr. Willyams expressed his regret that the death of his father prevented his being present, and requested the Chairman to apologise to the shareholders for his absence. Mr. Willyams went on to say that he was extremely desirous of meeting the shareholders, as he wished to convince them of the great value of the property and its future prospects, of which he could not speak too highly. He hopes, however, on his return from Cornwall to meet the shareholders, when he will be happy and willing to give them every information in his power; in the meantime he ventured to advise the shareholders not to allow any of the reports which are being circulated to frighten them into parting with their shares at a loss, believing, as he did, that the property was honestly worth double what it was three months ago, in consequence of the valuable discoveries which had been recently made.

The reading of the above letter from Mr. Willyams was received with loud cheers.

The CHAIRMAN then read the report which had been received from Professor Silliman. The report (which was a very lengthy document) went at very great length into the present condition of the mine, and particularly referred to the recent discovery of ore as of the very greatest possible importance to the future prosperity of the mine. The professor expresses the highest opinion of the value of the mine, and his belief that it will prove a very profitable undertaking to the shareholders.

The CHAIRMAN, referring to Prof. Silliman's report, said: I should, perhaps, explain about these new discoveries. It is of importance that we should trace our vein of ore to the spot were they have discovered it; we are, therefore, driving in a working from our present workings to prove the continuity of our vein, and if we prove the continuity we take possession of the body of ore without dispute. The discovery of that ore at 400 ft. from our present workings is of the very greatest importance, for it shows the mass of ore we have to deal with to be so much larger than anything we could have imagined before. (Cheers.)

Mr. BUMPAS (solicitor) then read a letter which has been received from the resident manager of the mines, going very fully into the present condition of the mine, and giving an account of the very severe snowstorms, which have prevented the transit of the ore from the mine.

The CHAIRMAN referred to one or two of the points alluded to in the resident manager's report. One point was with reference to the transit of ore by way of San Francisco; the directors had been making enquiries to see whether they could not save money by sending the ore to the western side of the continent, and bringing it by sailing vessel instead of bringing it by way of New York, but they found that by sending it by way of San Francisco there would only be a saving of 30*s.* per ton, and there would be a loss of three months in time, and the directors thought that the saving of 30*s.* per ton for freight would not compensate for the great loss of time. (Hear, hear.) The directors had it in contemplation to try and send some of the ore to be smelted in Germany, where they had carried the process of smelting to so much greater success than in England, and by this means it was expected that a material saving would be effected. As to the quantity of ore raised from the mine, he wished to say a few words. In the prospectus it was stated that there were 2800 tons of ore on hand, and it was expected that before the end of February 2600 tons more would be raised and sent home, the two amounts together making 5400 tons. Well, in October 127 tons were raised; in November, 86 tons; in December, 453 tons; in January, 861 tons; in February, 200 tons; in March, 234 tons; and in April, 450 tons: the total raised during those months being 2414 tons, which, added to the 2800 tons, made altogether 5214 tons of ore taken out of the mine up to the end of April, instead of 5400 tons to the end of February, as was expected, and a part of the ore was still at the mine in place of being in this country, But when they took into consideration the unprecedented severity of the weather at the mines, he thought the statement of the ores raised from the mine ought to be very satisfactory indeed. The directors had no reason to doubt that the moment the weather permitted, and the roads were repaired, they would be able to renew the quantities of ore to a much larger amount.

A SHAREHOLDER said he thought it would be generally acceptable to the shareholders if the directors sent round a good photograph of the mine.

The CHAIRMAN said the directors possessed a very beautiful photograph of the outside of the mine, but did not suppose the shareholders would care much about that. (A laugh.) As regarded the inside of the mine the directors mentioned, when they sent out Professor Silliman's report, that they would also send a map; but when that map was received it was of such a technical character that no one but a mining engineer could well understand it, and, as it would have cost 50*l.* at least to reproduce it, the directors thought they were hardly justified in spending the money. (Hear, hear.) Any shareholder could see the photograph and the map at the office.

A SHAREHOLDER called attention to the statement in the prospectus that there were 2800 tons of ore above ground, and asked whether that quantity of ore had been received, or whether any money payment had been received from the vendors to make up for a deficiency in the quantity of the ore stated to be above ground. The May circular stated that there were 5180 tons (including, he presumed, the 2800 tons received from the vendors) existing at the mine at that time; deducting one amount from the other it left 2380 tons raised by the company in six months, or at the rate of 396 tons per month raised since the mine had been in the hands of the company, or nearly 700*l.* less than the monthly dividends paid away. There was another point. The prospectus stated that the smelting works were "forthwith" to be erected, at a cost of about 10,000*l.*, but now it appeared a matter of uncertainty whether smelting on the spot was practicable or not.

The CHAIRMAN said that, as regarded the 2800 tons of ore stated in the prospectus to be above ground, he thought the shareholders must have gathered from the circulars sent round that there were 1000 tons deficient, which the vendors were bound to make up; and to make up that deficiency the vendors had actually paid the company 28,000*l.* in money. (Cheers.)

The SHAREHOLDER: Was that the money put down in the circular as "Ores sold at Utah?"

The CHAIRMAN: Yes, "Ores sold at Utah." The reason was this. During the time the negociations for the sale of the property were going on (and they lasted for a number of months), the vendors went on smelting and selling certain quantities of ore, and we considered they were bound to make up any deficiency on that 2800 tons, and they have done so. (Cheers.)

The SHAREHOLDER said his object was that the shareholders might be assured that the amount of ore mentioned had been raised from the mine.

The CHAIRMAN said he thought every shareholder who had read Prof. Silliman's report, and the other reports relative to the enormous quantity of ore, must feel satisfied on that point. With respect to the number of tons raised since the mine came into the hands of the company, he had already explained that. The quantity raised gave an average of 400 tons a month, which would be 10,000*l.* sterling per month, and, as 15,000*l.* sterling per month was required to pay the dividend, it would be seen that during the prevalence of the snow storms enough had not been received to cover the dividends. But, of course, the directors had not the slightest doubt that when the fine weather set in they could more than make up that deficiency.

A SHAREHOLDER said he understood that no dividend would be paid except out of profits.

The CHAIRMAN said that no dividend had been paid except out of profits; it could not be paid out of capital, for all the subscribed capital had been paid for the purchase of the mines, and there was no money with which to pay dividend except that which was received from the ore sold. The shareholders might rely upon it they would get nothing except from that source. (Hear, hear.) It must be remembered that there was 46,000*l.* of cash, the balance of old sales in London, handed over in the beginning of the company, which was sufficient for three months' dividend; therefore, there were only three months left, out of which the dividends were paid out of profit. With respect to the smelting-works, he thought the directors had exercised a very wise discretion in not erecting them before; they had fully informed themselves whether it was advisable to do so or not. Under any circumstances, if even it had been thought desirable to erect them, it would have been impossible to have done so during the recent severe weather.

A SHAREHOLDER enquired whether the Chairman could give any idea of the value of the reserves already discovered in the mine?—A SHAREHOLDER thought it was a difficult question, and that the Chairman ought scarcely be called upon to answer it.

The CHAIRMAN said he would willingly answer the question so far as he could. In Prof. Silliman's original report the reserve of first-class ore was stated at 13,000 tons, and in his second report it was stated that there were discoveries to the extent of a further 12,000 tons of first-class ore, and as only 1000 tons had been taken from the reserve in both those workings, there were 24,000 tons left. In his third report Prof. Silliman spoke of the discovery of a further 8000 tons of first-class ore, making 32,000 tons altogether, or 800,000*l.* sterling of first-class ore, without taking into account any second-class ore (which was enormous in quantity), and the directors did not doubt that the discoveries made since were worth as much more.

A SHAREHOLDER asked whether that 800,000*l.* was what the shareholders had given 1,000,000*l.* for. (A laugh).

The CHAIRMAN said that if gentlemen studied the prospectus they would not ask much questions. Of course the 1,000,000*l.* was paid, not merely for the actual amount of ore discovered at the time, but for the prospective discoveries, and how valuable those discoveries had been, and were likely to be, the report of Professor Silliman showed. (Cheers.)

A SHAREHOLDER: May I ask whether there is a prospect of continuing the present dividend for the next few months?

The CHAIRMAN: I think we have a prospect of continuing it about a year without any trouble, and long before the expiration of that year I hope we shall increase the dividend, and give you some handsome bonus in addition. (Loud cheers.)—Mr. HIRAM JOHNSTONE said he should like to know whether Prof. Silliman had been employed by this company, and paid by this company, for the several reports which he had made, some of which had been read at these meetings, or was it not true that he was both employed and paid by the vendors?

The CHAIRMAN said it was perfectly true that Professor Silliman was paid for his original report by the vendors, the directors considering that as part of the preliminary expenses of the company, which they did not choose to pay. The matter was fully explained to the last meeting by Mr. Park.

Mr. HIRAM JOHNSTONE said it seemed that Professor Silliman had made no less than four visits to the mine—at least, four several reports had been laid before the shareholders. He asked who employed Professor Silliman to make his second, third, and fourth reports, and who still employed that gentleman?

The CHAIRMAN said Professor Silliman had only paid one visit to the mine since it became the property of the shareholders, and the reports sent to the shareholders had been received from Professor Silliman at intervals during his visit to the mine. For that visit the company had not, up to that time, received any account nor paid any money.

Mr. HIRAM JOHNSTONE: I would ask the Chairman how many thousands of pounds stand to the balance of this corporation in its banking account to-day in the City of London.

Two or three shareholders expressed an opinion that this was a question which the Chairman ought not to be called upon to answer.

The CHAIRMAN said he had no objection whatever to answer the question. There was 20,300*l.* in the bank to-day, and 38,000*l.* to receive from Liverpool, making over 58,000*l.* altogether. (Cheers.)

Mr. PARK rose in response to a general call from the meeting, and was loudly cheered. He said he regretted exceedingly that just on the eve of his departure for America, and especially after what had been said of the Emma Mine and the vendors, he had not the pleasure of meeting the shareholders in company with Mr. Willyams, who had just returned from Utah, after making an examination of of the company's property. When this property was first placed upon the market, last December, representations were made by the vendors as to their knowledge of the mine at that time, and their knowledge of what the mine had done previous to that time. Every statement made by the vendors, and every statement made in the prospectus as to the past of the mine, and what it had done since it was discovered, and as to what it was then doing, had been more than verified by every investigation which had been made since. (Hear, hear.) When an application was made to him, as representing the vendors, to sell his shares, in order that a quotation might be obtained upon the Stock Exchange, his answer to the directors was, "I will not sell another share for any sum or any price until every single charge made against the enterprise and against the vendors has been cleared up by an examination to be made by the directors." I said, "An examination shall be made, and every statement made by the vendors and in the prospectus shall be verified, and when that has been done I will make arrangements to make such disposition of the shares as I intended to make to enable them to get a quotation." He made that statement at the last meeting, at the time they had a telegraphic dispatch from Mr. Willyams; and he (Mr. Park) could only say that if the mine, at the time it was offered to the public, showed anything like the prospects which it did at the present time it would not have been offered for 1,000,000*l.* Now, every statement which had been made had been verified by a director sent out from the English board. He said at that time that if anyone were dissatisfied with his purchase all he had to do was to return his shares, and he (Mr. Park) would return the money; but no one returned his shares. Since that time the shares had advanced 10*l.* per share; they should have advanced more than four times 10*l.* per share, for if the shares were worth 20*l.* when put upon the market they were now worth four times the 20*l.*—that was assuming the truth of the reports received from Prof. Silliman and Mr. Willyams. There was something remarkable about the "bearing" effort now being made to run the shares down in the market. No man had been found who had ever seen the Emma Mine who did not give a character to the Emma Mine consistent with every report given by the vendors and in the prospectus. As regarded Prof. Silliman, he had never seen that gentleman, but he knew him by reputation as a highly honourable man, and as second to none as a scientific man in the United States; and if in the circulars which had been sent round any imputation were made upon Professor Silliman, he would not insult a gentleman of his high standing and position by saying one word in his defence. (Loud cheers.) Was it possible to suppose that Prof. Silliman would make a certain report because he was paid for it by one man or another? He was sent there to give the truth, and his reputation was a guarantee that he would speak the truth. (Cheers.) Prof. Silliman was selected by the vendees (not by the vendors) because of his reputation. But that was not all. When the question was first canvassed as to the truth of the reports which had been circulated he (Mr. Park) told the directors that they might send out any member of the board, or a number of scientific men, and he (Mr. Park) would pay the expense; and he was perfectly satisfied that the reports received from the gentlemen sent out would have been fully corroborative of the statements which had been made, that the increase in the price of the shares which he held would much more than repay any expense which he might have paid for sending out those gentlemen. (Cheers.) There was no doubt that Mr. Willyams was a proper man to send out, for he had a great knowledge, not only of silver mines but also of other mines, and was also a practical smelter. Two gentlemen of high standing accompanied him; one the author of "Guy Livingstone," who was, he believed, about to write a work on Utah, and, no doubt, the shareholders would have an opportunity of reading about their own mine. The other gentleman was a man of considerable prominence. There was a fact in connection with the visit of those gentlemen which was even more satisfactory than the reports which had been received relative to the mine, and that was that immediately after his first examination Mr. Willyams sent home a cable despatch, ordering 500 shares to be bought for him on the market, no matter what the price. After a second examination, Mr. Willyams sent an order for the purchase of a second 500 shares. Well, people do not buy to that extent unless they well knew what they were about, and Mr. Willyams was at the mine, and had made a careful examination before he purchased the shares. The other two gentlemen also sent home orders to purchase a large number of shares of the company, and he (Mr. Park) contended that those facts were worth the reports of half a dozen ordinary men. Then, with respect to the new explorations. The only question about the mine was as to whether it was a pocket or a true vein. When he purchased the mine the total working length was less than 100 feet, and the total working depth less than 100 feet (excepting, of course, the winze for working); since then the explorations had been made, and 230 feet had been added to the working length, and more than 100 feet to the working depth; and now the tunnel referred to by Prof. Silliman really opened up a new Emma Mine, which contained more than all the ore of the original Emma Mine. He explained that the mine was on the side of a hill, and said that the recent explorations had demonstrated beyond a doubt that the Emma Mine was a true vein mine, and not merely a deposit. That was really the important point the shareholders wanted to know, and from what had been discovered up to the present time there was ore in sight sufficient to yield dividends for years—indeed, probably beyond the life of any gentleman present. No doubt the quantity of ore taken out of the mine had not come up to what was expected, but, as the Chairman had stated, that was fully accounted for by the severe weather of the last winter; and, indeed, under all the circumstances, he thought the shareholders might congratulate themselves upon having been able to remove the quantity of ore they had done. There had been one advantage in not having been able to remove the ore, and that was that the men had been kept at work at exploration, with what valuable results was already known to the shareholders. The ore continued to be taken out of the mine until the ore-house was full, and it was no use going on taking out the ore whilst the bad weather prevented its removal; indeed, it could not be taken out, as there was no place to store it in. He congratulated the shareholders upon having secured, as he believed, the best mine ever put upon the English market. He then referred at some length to the circulars which had been sent round, making damaging statements regarding the mine, and referring particularly to statements made by Messrs. Johnstone, and cautioned the shareholders against allowing themselves to be induced to part with their shares by any statements which might be made. They might rely upon it that damaging statements were made for the benefit of the persons making them, and not to promote the welfare of the company. He also alluded to the Chancery suit, and the amount of 100,000*l.*, which it was stated had been paid to Mr. Albert Grant, and stated (as he had already explained to the Court of Chancry) that the amount paid to Mr. Grant under the agreement did not exceed 20,000*l.*, and he could bear testimony to the able, honest, and straightforward manner in which Mr. Grant had conducted all the negociations in connection with the sale to the company. He

alluded to the circular which he had issued, offering 1*l.* per share for the sale of the shares at 40*l.*, and that seemed to be but a little misunderstood, and many shareholders, thinking he wanted to purchase shares, had accepted it. He wished to explain that if the shares went above 40*l.* he got the profit, but if they did not reach 40*l.* the sale was not effected, as he was not bound to take the shares until the 40*l.* was reached, and he advised the shareholders who had accepted it to withdraw. In conclusion, Mr. Park congratulated the shareholders on the possession of a mine which he believed to be the best ever offered on the English market. (Cheers.)

The CHAIRMAN in answer to a question, said the application for a settlement was now before the Stock Exchange Committee, but as there had been a very great deal of business before the Committee they had not yet been able to deal with this company's application. All the requirements of the Stock Exchange Committee had been complied with, and there was no reason to doubt but what a settlement must be granted.

One or two other questions of an unimportant character were then asked and replied to, after which a vote of thanks was passed to Mr. Park for his able exposition of the affairs of the company. Several shareholders expressed their satisfaction with the honourable and straightforward manner in which Mr. Park had conducted all the negociations in connection with the sale of the mine. One or two shareholders also bore witness to the very high character and high scientific attainments of Prof. Silliman.

A vote of thanks was then passed to the Chairman and directors.—The CHAIRMAN acknowledged the compliment, and said that in about a fortnight he hoped again to summon the shareholders together to meet Mr. Willyams.

SCOTTISH AUSTRALIAN INVESTMENT COMPANY.

The half-yearly general meeting of shareholders was held at the London Tavern, on Friday, May 3,

Mr. Alderman CHARLES WHETHAM in the chair.

The notice convening the meeting was read by Mr. GRAINGER (the secretary), and the directors' report was taken as read. It stated—

The profit and loss account shows a balance of 21,461*l.* 13*s.* 8*d.* The general revenue account shows that after appropriating 8377*l.* 11*s.* 10*d.* for the payment of interest on the debentures, dividend on the 6 per cent. guaranteed preference stock, and income tax there remains an available balance (including 1455*l.* 9*s.* 7*d.* brought forward from the previous half-year's account) of 14,539*l.* 11*s.* 5*d.* The directors propose to pay a dividend on the consolidated ordinary stock of the company at the rate of 7 per cent. per annum, free of income tax, to add 3000*l.* to the reserve fund, which will then amount to 26,000*l.*, and to carry forward 1039*l.* 11*s.* 5*d.* to the credit of the next account. It is proposed to make the dividend payable on and after Wednesday, the 8th inst.

The annual working accounts and returns relating to the Bowen Downs and Mount Abundance and Nive Runs will be made up to March 31 last, and submitted as usual with the directors' next half-yearly report. These properties continue to progress in a very satisfactory manner. The last spring season at Bowen Downs was somewhat dry and cold, but the most recent accounts received from Mr. Morehead describe these runs as in excellent condition, and the sheep and cattle depasturing on them to be thriving and doing well. Of the Mount Abundance and Nive Runs the manager makes a similar and equally satisfactory report. Considerable sales of both fat and lean stock from all these stations had continued from time to time to be effected at improved prices. The quality of the wool grown there has been much improved; and while the directors consider they have had much reason to be satisfied with the prices for the clip of 1870, they are led to expect that the last clip, as Mr. Morehead states, "will be found at least equal if not superior" to it, and that it is coming to a good market. The weather was fine, and the season altogether promising to be a favourable one in the localities where these three properties are situated.

Further progress has been made in dealing with the properties in course of realisation. As regards the Albert River Runs the manager reports—"There is another mob of cattle from the Gulf of Carpentaria on the road to market, and now pretty far south. These, being principally mature male cattle, will realise we anticipate materially more than the price at which those transferred to the Nive were taken into account. We have tidings of a third mob as on the same route. Both of these lots we expect to sell at satisfactory rates, as the demand for cattle is very good at present, and the market is expected to continue favourable." The directors have nothing fresh to report in connection with any of the company's investments in land, houses, &c. It is obvious, however, that they cannot fail to be beneficially affected by the growing industries and increasing wealth of the Australian colonies generally. The more favourable seasons which have lately prevailed, and the higher prices obtained for fat stock, wool, and other produce have already wrought a great change in the staple interests of the colonies; and it affords the directors pleasure to be enabled to congratulate the proprietors on the marked and satisfactory improvement which has taken place in the position and prospects of the affairs of the company.

The CHAIRMAN said he had to congratulate the proprietors upon the improved position of the company, and to thank them for the support which they had given the board during the trying times from which they had just emerged. They were now able to pay 7 per cent., after making the reserve fund up to 26,000*l.*, and carrying forward 1039*l.* An important point which the directors had in view was to get up a good reserve fund. He would like to see it made up to 50,000*l.* Past experience had shown the necessity of doing so, and he fully reckoned on the support of the proprietary in enabling them to carry out this important measure. The directors also had in view the conversion of the debentures into debenture stock whenever that step should be found practicable. He believed the company was now in a sound position. He moved that the report of the directors to the proprietors be received and adopted, and that the dividend therein proposed, at the rate of 7 per cent. per annum, free of income tax, be confirmed, the same to be payable on and after Wednesday, May 8.—Mr. A. L. ELDER seconded the resolution.

The remarks which followed the Chairman's observations were of a congratulatory character; and after the CHAIRMAN had answered the questions that were put by proprietors, the resolution was put and carried unanimously.

Messrs. James Denis De Vitre and Adolphus W. Young, M.P., were re-elected directors, and W. B. C. Maxwell auditor. The remuneration to the auditors was voted, and the proceedings terminated with a vote of thanks to the Chairman.

ANGLO-ARGENTINE COMPANY.

The annual general meeting of shareholders was held at the London Tavern, on Tuesday,—Mr. S. LLOYD FOSTER in the chair.

Mr. WILLIAM FLETCHER (the secretary) read the notice convening the meeting.

The report of the directors referred to the delay that has incurred in getting the amalgamating machinery, &c., from Rosario to the mines, in consequence of which no gold returns have yet been obtained. The directors much regret this delay, after the expectations held out that during the past year returns would be obtained; but they trust that the company's difficulties are now surmounted, as the report for January contained the satisfactory announcement that 12 heads of stamps had commenced permanent stamping. Capt. Vivian expresses his firm conviction that when the appliances for treating the ores are in full operation the results will be eminently satisfactory. The second 12 heads of stamps were expected to be ready in March last, and the remaining 12 heads some time in the month of June. With 36 heads of stamps at work, Capt. Vivian estimates that he will be able to crush 1500 tons of ore a month; should the ore give an average yield of 1 oz. to the ton, which there is every reason to believe it will (assays of the ordinary mineral giving from ¾ oz. to 3¼ ozs., and the desmontes from 6 dwts. to 22 dwts.), and, taking the manager's estimate of expenses as correct, a profit of 40,000*l.* per annum will be realised.

The CHAIRMAN having referred to the absence of Mr. Haymen, the Chairman of the company, who was on his way home from California, explained the causes of the delay in the delivery of the necessary machinery at the mines, which delays were the only cause that had prevented the property now being in a paying condition. The report of Capt. Vivian fully detailed the progress at the mines, and the directors believed Capt. Vivian to be a most truthful and able man. The report was most satisfactory as regards the quantities of ore, and it would be seen that on Dec. 30 the first 12 heads of stamps were set in motion, and worked in a satisfactory manner; that the second 12 heads of stamps would be completed with the least possible delay—all the staff of mechanics were and have been for some time past concentrated on appliances for treating ore; and Capt. Vivian adds that in starting and laying open the mine they had experienced many difficulties, such as, perhaps, no other company in South America had had to contend with, and the surmounting of some had required a great deal of patience and perseverance; but he was glad to say they had been surmounted, and he believed the shareholders were now on the eve of reaping the benefit. The second 12 heads were expected to be started in March, and the remaining 12 heads in June. The existence of the ore in enormous quantities had been confirmed by several practical authorities, the whole of whom referred also to its satisfactory quality. It was not, therefore, a question of finding ore when the machinery had been erected, but of erecting the machinery to work the ore already discovered—the ore was there waiting for the machinery; therefore, Captain Vivian was justified in stating that, looking at the extent of ground comparatively unexplored, the size of the lodes, and the cheap rate at which they can be broken and sent to stamps, he cannot but consider that the prospects are of the most cheering character, and it is his firm conviction—when the appliances for treating ore are in full operation—that the results will be eminently satisfactory. By the retirement of two members the board had been reduced, and the vacancies had not been filled up, on the ground of economy. In two months hence they might expect to receive reports showing what was being done, and the returns that were being made. The accounts had been audited by Messrs. Waddell and Co., and the only item to which he need draw attention was the enormous cost for the transport of the machinery up to the mines. The actual cost of the machinery delivered at Rosario was about 6000*l.*, while the transport from Rosario up to the mines nearly doubled its cost—that item, however, would soon be almost entirely cleared away from the account. The Government had treated the company most liberally, for, on the petition of Captain Vivian, they at once consented to remit all import duties for five years, from September last, which would save the company a great deal of money. (Hear, hear.) He then moved the reception and adoption of the report and accounts.—Mr. MARGETTS seconded the proposition mentioning that the import duties on quicksilver alone was 25 per cent.

The report and balance-sheet was received and adopted unanimously.

The CHAIRMAN congratulated the shareholders upon the fact that the enormous difficulties against which they had had to contend had been surmounted. He believed this would be the last meeting at which a dividend was not declared, and he trusted at the next meeting, when their Chairman would be present, he would be able to recommend the declaration of a very handsome dividend. Only three years had elapsed since the company commenced operations at the mines, and all the capital had been expended at the works; there was the balance of debentures still to be placed, and the directors had terms offered from persons to place them. There was nothing at all to prevent this company being the great success so long anticipated.

Messrs. Waddell and Co. were re-elected auditors.

Mr. GREEN proposed a vote of thanks to the Chairman and directors for the efficient and satisfactory manner in which they had conducted the company's affairs. No doubt they had all had their patience sorely tried; but, at the same time, he believed those who had shown their patience by still holding their shares would be handsomely rewarded. The greatest economy had, no doubt, been adopted, or a much larger number of debentures would have been issued.

The motion being duly seconded was put and carried unanimously.

The CHAIRMAN, having appropriately acknowledged the vote, stated that the board had worked very hard from the commencement of the company, and a great deal of important work had been accomplished, and the greatest economy had been exercised. He agreed with the hon. proprietor who expressed his belief that those who had not parted with their shares would be amply rewarded.

The proceedings then terminated.

BRYNYSTWITH LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Coffee House, Gresham-street, on Monday, to approve, ratify, and confirm the Deed of Arrangement, dated April 16, between the Brynystwith Lead Mining Company (Limited) of the first part; John James Atwood, John Parry, and others: to pass a resolution requiring the company to be wound-up voluntarily: to appoint liquidators: to authorise the liquidators to transfer the mine and property of the company to a new company, to be formed and registered upon the terms and conditions contained in the above-mentioned Deed of Arrangement,—Captain ROSS in the chair.

The SECRETARY read the notice convening the meeting.

The CHAIRMAN said, before entering upon the special business of the meeting, he wished to dismiss from the minds of shareholders any idea—if it existed—that the company was in any financial embarrassment. He wished it to be clearly understood such was not the case, although a little more capital would, in all probability, be presently necessary, so as to fully and thoroughly develope the mine. When that time came he should be very glad if the shareholders would subscribe it, rather than allow the outside public to participate in the benefits to be derived from the expenditure incurred. Before proceeding to move the confirmation of the Deed of Arrangement referred to in the notice, he would direct attention to what he said at the previous meeting, held on Nov. 4. At that meeting he said (he was quoting from the report which appeared in the *Mining Journal*) that in 1870 attention was directed to the fact that the board had under its consideration a proposal which, if carried out, would prove a material benefit to the shareholders. The negociations were yet pending, and, therefore, it would be to the interest of all concerned if it were allowed to be completed before he entered further into details. The whole scheme would, of course, require the sanction of the shareholders at a special meeting, and which, he submitted, would be the most opportune time to fully discuss every detail, but if entered into at the present time the negociations would of necessity be prejudiced. What was then said relative to this matter equally applied at the present time, and all he need add was that the board would do their best for the interest of the company. The directors had been for a long time in negociation for the promotion of the shareholders' interests in a direction advantageous to the company, and the result had been most satisfactory. It would come to this presently—that it would be proposed to divide the property. There were purchasers ready to find ample working capital, and who were willing to give the shareholders in the present company a very large interest in the company which they would form. As stated in the circular accompanying the notice convening the present meeting, the object now in view was to carry out that proposition. It had been very evident to the directors and managers for a long time past that the company possessed a great deal more mining ground than could possibly be worked by one company during the next century—hence the proposition to sub-divide the property; and to enable them to dispose of one-half to another company to be formed it had been legally necessary to get a variety of things done, the result of which was embodied in the Deed of Arrangement he was about to read. The Memorandum and Articles of Association were found obstructive, and difficulties had been experienced with the vendors, who were very large shareholders. Upon the death of one of the vendors sanction was obtained to the carrying out of the agreement. The effect would be to wind-up the present and form a new company for continuing and extending the present workings, allotting to each shareholder the relative interest at present held; and, at the same time, dispose of the other half of the property to another company for 15,000*l.* in paid-up shares, to be allotted *pro rata* to the shareholders upon the register to-day. He then read the Deed of Arrangement.

A SHAREHOLDER asked if any shares were relinquished whether they would be sold by tender among the general body of proprietors?—The CHAIRMAN did not apprehend any shares would be relinquished—at any rate, he was a buyer of any number at par. Pending these negociations the mine had been worked very slowly, and recently the entire cost had been met by ore returned from driving the levels alone. So that when there were eight or ten levels driven through such a course of ore it was a matter of simple calculation what amount of profit would be realised. The mine possessed every facility for an economical working, not the least important feature being that there was no necessity for steam pumping machinery. This mine, it should be recollected, had a proved mineral history extending over a period of something like 200 years, and another 200 years could not see its resources exhausted. He believed if they had sufficient capital to open 20 levels, in each would be found a good course of ore. The celebrated Lisburne Mine was in the immediate neighbourhood. He then read the resolutions embodied in the notice convening the meeting.—Mr. EARLE seconded the propositions, which were put *seriatim*, and carried unanimously.

There were 72 shareholders represented in person and by proxy. The Chairman was appointed liquidator.

A confirmatory meeting will be held in not less than 14 or more than 28 days, to confirm these resolutions, after which the new company will be registered.

The CHAIRMAN, in reply to a question, expressed a hope that in twelve months hence their sales of lead ore would be 60 to 70 tons per month, which in a mine worked so economically as this would be equal to 100 tons in mines less favourably situated. In that case shareholders would be in receipt of very good dividends from this source alone.

Mr. OWEN thought it a great pity shareholders did not visit the property, and judge for themselves of its merits. No property would be so easily or advantageously divided, and each portion could be successfully worked without interfering with the other. The directors had had several consultations upon the subject, and their Chairman, who had had many years personal experience in mining, and whose opinion was entitled to every respect, had spared neither pains nor expense in bringing about the desirable result which was now an accomplished fact. (Hear, hear.) He then moved that the best thanks of the shareholders be given to the Chairman for his untiring zeal in promoting the best interests of the company, and for his able presidency upon this occasion.

Captain BLACKETT having seconded the proposition, it was put and carried unanimously.

The CHAIRMAN having appropriately acknowledged the vote, the proceedings terminated.

WHEAL COATES TIN MINING COMPANY.

The statutory first general meeting of shareholders was held at the company's offices, Great Winchester-street, on May 4,

The Hon. ASHLEY PONSONBY in the chair.

The SECRETARY read the notice convening the meeting, and the certificate of registration was laid on the table.

The CHAIRMAN reported that the number of shares agreed to be issued had been subscribed, and stated that, in conformity with a resolution of the board, he and the secretary had visited the mine, attended by Capt. Martin and Mr. Bryant. From the workings on the old and central part of the mine it is evident that the old miners had very rich courses of ore, as the lodes had been opened up from grass downwards to a considerable depth. The balvans afford strong evidence that rich deposits of tin were found in the lodes particularly, as during the last nine years these have been carted to the stamps, and profits have been regularly made. These balvans, notwithstanding, seem inexhaustible. In consultation with Capt. Martin, after full inspection of the property, they consider that there are required immediately—a drawing and pumping engine, which, with erection, will cost about 700*l.*; a steam stamping-engine, with boilers and 36 heads of stamps, at a cost, including erection, of (say) 1450*l.*; but it should be remarked that the price of machinery and materials is increasing so rapidly that these estimates cannot be definitely fixed. Dressing-floors on an improved plan will be made by degrees as required, at a cost of (say) 300*l.* Pitwork, materials, stores, &c., about 150*l.* Smith and carpenter's shop, tool-house, and magazine, about 150*l.* Counting-house to be put in thorough repair to receive the underground agent, at a cost of not exceeding 15*l.* Captain Martin's opinion of this property, from repeated visits, examinations, and assays of the tin ore (which he himself has broken), is such that he has no hesitation in recommending the proposed outlay. The several mine officers were appointed, and the four-weeks pay was determined upon. They then visited the adjoining mines on the east, and observed that the operations were in each case chiefly westward in the direction of the Wheal Coates property; and they found on enquiry that the lodes throughout the district increase in richness as they proceed westward. In conclusion, he stated that his visit had fully impressed him with the importance and value of the property, and as far as he could see there is every likelihood of a great return being made from the mine, and he feels he can unhesitatingly congratulate the shareholders on the acquisition of a property of such value.

Capt. W. H. MARTIN reported upon the various points of operation, and stated that he was gratified to say that all their operations are progressing satisfactorily. The number of hands employed is 36 men and 1 boy. He adds that during the short time they have been at work—three months—they have sold 2 tons 13 cwts. 3 qrs. of black tin, realising 253*l.* 12*s.* 4*d.* In conclusion, it is his opinion that there is no doubt of the mine opening up profitably, and if they had their steam-stamps at work they have already stuff laid open to make regular sales of tin.

The reports were received and adopted, and the proceedings terminated in the usual manner.

WHEAL BASSET AND GRYLLS.—At the quarterly meeting of adventurers, on April 24, the accounts showed a loss on the quarter of 57*l.* 2*s.* 2*d.*, and a total debit balance of 151*l.* 17*s.* 2*d.* It was resolved that the 60-in. cylinder engine purchased by the committee for 90*l.* be approved; and the shares in the mine were sub-divided into 2052nds instead of 684ths. Capts. W. Oats and P. Prisk say—"We have employed on tutwork 52 men and 3 boys; on tribute 56 men, 7 boys, and 2 girls; pit and timbermen, 2; carpenters, 3 men; sawyers, 2 men and 1 boy; smiths and strikers, 2 men and 2 boys; enginemen, 11; bruising samples, 1 man; landers and fillers, 8 men; spallers and surface men, 20 men and 3 boys: dressing tin, 7 men, 40 boys, and 50 girls.—Total, 164 men, 56 boys, and 52 girls."

NEW WHEAL SETON.—At the meeting of adventurers, held on April 30, a call of 3*l.* per share was made. Capt. M. Bath says—"I am still sanguine as ever that by a little more perseverance good results will be realised."

EAST TRELEIGH WOOD.—A meeting of shareholders was held at Tabu's Hotel, Redruth, Mr. W. M. Grylls in the chair. It was resolved that the mine be worked under the Stannaries Act of 1869, and that it be divided into 6000 shares. Messrs. Lean, Jose, and Co., were appointed pursers and managers, at a salary of 8*l.* 8*s.* per month. Captain Leonard Tregay was appointed the resident agent, at 8*l.* 8*s.* per month, and Messrs. Michell and Jenkin were appointed engineers. It was also proposed that 50 guineas should be presented to the promoters for obtaining the setts and bringing out the company; but this the promoters respectfully declined, so that there is no promotion money whatever, and nothing will be charged beyond the actual expenses. Although the mine is only divided into 6000 shares, more than 10,000 were applied for, and premiums were readily offered in the room. Captain Tregay stated that they had the Cardrew lode and the wheal Harmony lode traversing the length of the sett, formerly yielding more than 20 tons of tin per month. The low price of tin at that period—only 35*l.* per ton—caused the workings to be carried on at a small monthly loss. The present price of 95*l.* per ton for the same quantity would leave a very handsome profit. They likewise had the Treleigh Wood lode running the whole length of the sett, which although now so rich in Treleigh Wood, at the time the mine was last worked was but very little noticed. This he considered of the highest importance to the company.

SOUTH WHEAL FRANCES.—At a meeting of adventurers, held at the mine on Monday (Mr. Robert R. Broad in the chair), the accounts for February and March showed a loss on the two months' working of 379*l.* 1*s.* 4*d.*, which, being deducted from the credit balance remaining at the last account of 517*l.* 18*s.* 1*d.*, leaves a credit of 138*l.* 16*s.* 9*d.*, to be carried forward. The attention of the adventurers being called to the stipulation of the lords respecting the sinking of a new shaft on the western ground, the committee and agents were empowered to take the necessary steps for commencing the work at the earliest period. Another agent was appointed to assist Capt. Prisk, who is now day and night agents. A proposition that Mr. John F. Penrose be added to the committee was postponed by a majority of 61 shares. Since the last account, in March, the committee, by a special appointment with the lords' agents (representing Mr. Basset, Sir R. R. Vyvyan, and Mr. St. Aubyn), met the latter gentlemen at the mine on April 25 to receive the result of their deliberations touching the renewal of the leases, which will soon expire, when Mr. Cartwright (Mr. Basset's representative) communicated that the lords were all agreed to acquiesce with the committee's request, and upon the same limits and boundaries as are in the existing lease, with a very slight alteration of the line on the north boundary, merely, as was explained, to give it a straighter character, and on a give-and-take principle with West Basset, the adjoining sett. It was further stipulated by Mr. Cartwright that the shaft, which was consented to being sunk by the adventurers some time ago in the western portion of the sett, should be commenced forthwith, and an engine of sufficient power erected, and that the dues would be granted at a 20th, but during pleasure a 24th only would be demanded. With these terms the committee, on behalf of their co-adventurers, thought it proper to comply. Capts. W. Pascoe and J. Prisk say—"We regret the amount of loss shown by the accounts, on the two months' working, and have to notice that it has arisen from the following circumstance—the breakage of the driving axle to the steam-stamps, which caused a delay of a fortnight before a new one could be obtained and fixed, and the stamping was, consequently, idle for that period. In addition to this casualty, the increased consumption and high price of coals have very seriously added to the merchants' bills, which are otherwise inconsiderable."

[For remainder of Meetings see this day's Journal.]

LEAD MINING IN CARDIGANSHIRE.

WEST GOGINAN SILVER-LEAD MINING COMPANY (LIMITED).

In directing the attention of our readers to this favourably situated and admittedly valuable mine, we have the pleasure of stating that the leading operators on the Stock Exchange, who possess their own especial means of attaining reliable information, are dealing in them at a substantial premium, and at the time we are writing an active market exists at 1¼ prem., some influential buying being recorded daily.

For the information of those unacquainted either with this particular mine or the famous district in which it is situated, it may be mentioned that West Goginan forms, as it were, the centre of really the most valuable mining zones throughout Wales. Geologically it is circumscribed in extent, but it possesses within a comparatively small radius some of the richest mines in the United Kingdom, if not in the world. A few instances will prove the accuracy of this statement—for example, the Lisburne Mines, upon each share with 18*l.* 15*s.* paid, have returned 343*l.* 10*s.*; the Cwmystwith Mines, upon each share with 60*l.* paid, have yielded 394*l.* 10*s.*; East Darren upon each 32*l.* share, has returned 201*l.* 10*s.*; the Cym Erfin upon each 7*l.* 10*s.* share has returned 31*l.* 10*s.* per share, while the permanency of most of these mines, judging by the present returns and general prospects, would appear to be in no way impaired. These few mines have up to the present time returned to their respective shareholders in dividends nearly 290,000*l.* upon an aggregate capital of 90,000*l.*

The *Mining Journal* (to whom we look for information on these points) states that West Goginan has been worked by private capitalists for some years, and that the success of the various developements warrants the expressed belief on the part of the leading practical authorities connected with the surrounding mines, that a more vigorous and extended working is the only thing wanting to establish it one of the prominent mines in this favoured locality; and adds that it is not often so many well-known "practicals" are found to attest an unequivocally favourable opinion in regard to any comparatively young progressive mine. Mr. Walter Eddy, M.E., Captain Northy (Bwlch Consols), Captain Boundy (of Goginan), and Captain Kitto (of Llanilloes) are among those whose reports speak most confidently of the future remunerativeness of the mine, all of whom agree that there is every reason to expect, when the property shall have been fully developed, it will prove equally as productive and profitable as any of its neighbours.

This practical evidence is supported by a member of the board, who personally inspected the mine. This gentleman states that, although mining affairs are more or less speculative, his own deliberate opinion is that in this case risk is reduced to a minimum, if not altogether beyond it, and he "looks upon the matter more as a decided investment than as a speculation." Since this refers to a mine surrounded by such astonishing prizes as those above enumerated, we think all must admit that we cannot be regarded as unduly sanguine in expecting at least highly profitable results from West Goginan.

Upon a previous occasion we have pointed out that it is contiguous to the celebrated Goginan, which has paid in dividends 440*l.* on each original share, having returned ore of the value of 195,000*l.* It is intersected by the same lodes, and the explorations already made have disclosed a sufficient amount of lead to satisfy those practically familiar with the mineralogical features of the district that an energetic and scientific development is alone required to render West Goginan equally profitable with its rich neighbours.

We cannot but reiterate the fact that an opportunity is not often presented to the investing public of securing an interest in a proved mine, situated in the richest district in Wales, upon such exceedingly liberal terms. The whole venture would appear to be free from ordinary mining contingencies, while in the event of any important discovery being made a handsome and substantial return would be secured by a very trifling outlay of capital. This was the case in the well-known Van, the shares of which were offered to the public at 4*l.* 5*s.* per share—an important discovery was soon afterwards made, and the shares advanced to 80*l.*!

In West Goginan there are only 12,000 shares of 2*l.* each; and no mine in this justly celebrated locality has ever been offered upon such advantageous terms; and who can say that West Goginan shares may not advance to an enormous price, or to a marketable value equal to that obtained by the surrounding mines?—"*Notes on Investments*," published by G. R. ROSS and Co., 26, Nicholas-lane.

WHEAL MOUNT (Tin).—This mine is situate in the parish of Sithney, in the county of Cornwall, and held under agreement for lease for 21 years at 1-18th royalty. Considerable work has been carried out, and the lodes are proved to be highly charged with mineral. Water exists in abundance to work the machinery, which will effect great economy in dressing the ores and other mechanical appliances required. The district in which the company's grant is situate is one of the most renowned in Cornwall, and mining to a great extent has been carried on for centuries past. Great Vor, Wheal Metal, Great Fortune, and many valuable properties lie westward, whilst Trumpet Consols, Wheal Lovell, and others adjoin and extend eastward. The produce of these mines has been fabulous! It is within the mark to compute by millions, instead of thousands, sterling. We may observe that tin mining in Cornwall is far more profitable and permanent in character and yield than any other department of our mineral productions. From remote history it was a source of attractive wealth; nay, the Romans invaded this country to secure the metal. In order to show the value and solidity of tin mining, when the workings are conducted with skill, and carried out with practical economy, we refer to Providence, a dividend mine 30 years ago, and now a most remunerative property. Great Vor and Wheal Metal, west of Wheal Mount, have been at work, with slight intermission, during the present century, continuing to this day among our greatest as well as market favourites. Tincroft is selling at 350,000*l.*, and paying dividends of 50,000*l.* annually, and was a good paying mine 35 to 40 years ago. Dolcoath has returned millions of sterling produce, extending over the past 100 years; the dividends at present are about 45,000*l.* annually, and the market value is 400,000*l.* East Pool, again, is, after 35 years' working, a good dividend and popular market property. Carn Brea gave 400,000*l.* gains, and became abandoned, was re-worked, and gave 500,000*l.* and upwards, and again abandoned, yet about 37 years ago the workings were unwatered, and, with an expenditure of 15,000*l.*, profits of 300,000*l.* accrued. For a few years the costs exceeded the yield, still the future is fraught with unusual promise of dividends, and the shares have advanced to above 130*l.* each; the last quarterly dividend was 3*l.* 10*s.* per 1000th share.

ROSEWALL HILL AND RANSOM UNITED.—After many years of patience the spirited adventurers in this mine are likely to be rewarded. All the levels driving east have considerably improved. The rich lode in the 100, 60, the 90, and the 110 fathoms ends are daily improving, and now form an important feature in the mine. The returns of tin have been greater during the last two months than at any former period, and more would have been sent to market but for an accident to the stamping machinery. A correspondent remarks that "though divided into the same number of shares, it is too soon to hope that Rosewall Hill will rival Tincroft in the market; but looking at the difference in the price, 75*l.*, compared with 25*s.*, there are certainly grounds to hope that the two will approximate somewhat nearer to each other, especially if the adventurers could only hit upon a Captain Teague to quadruple the price of the shares by the mere weight of his name.

NEW WHEAL LOVELL (Wendron).—A most unexpected discovery of copper ore has been recently made in the 50 fathom level east in this mine, where the lode is stated to be 5 ft. wide, and worth from 30*l.* to 40*l.* per fathom,

and the stope in the back of equal value. A good sampling of copper ore from a mine in the centre of the tin-producing parish of Wendron will, says a correspondent, certainly upset the opinions of those who have always contended that copper is not to be found in the centre of a granite range.

CHIVERTON MOOR.—An important discovery has been made in this mine at the 90 fathom level west, where a new lode has been cut, considered to be a caunter lode, 3 feet wide, and containing very good lead. This is supposed to be the same lode as that previously seen at the 65 fm. level. Attention is also being turned to the shallower levels, where several pares of tributers are asking for pitches, and means are being taken to facilitate their working. The ground in question has hitherto been locked up in consequence of an unfortunate boundary question, but which, since the purchase of the Chiverton Valley Mine by the Chiverton Moor Company, is now in a fair way of being developed successfully.—*Western Morning News.*

Royal School of Mines, Jermyn Street.

[FROM NOTES BY OUR OWN REPORTER.]

LECTURE XXXVI.—In working veins of moderate size and ordinary character with a pretty strong ground they suggest no special difficulties, but when the ground is weak and the lode large the task is more formidable. From what we have already said it will have been seen that the proper selection of the modes of working will often make all the difference between two mines similarly situated as to the profit to be derived, and the degree of safety which the men may enjoy. Although other modes of working may be applicable when the lodes present no great regularity, "stoping" is the most favourable when the whole of the vein is to be removed. It is, therefore, a system very generally adopted, but there are one or two variations which require special notice. These variations are generally attributable to the nature of the circumstances to be dealt with. Thus in the silver mines in the Hartz the underhand system is generally more prevalent than in Saxony and Cornwall, and that not only on account of the material worked, but because the lodes occur between stratified deposits, and the courses of ore run along them in a horizontal form. In the latter case the level is driven so as to cut the vein in a productive part, having the ore-bearing ground in close proximity, so that a rise of a few feet will bring the miners into it. Separate sets of men work in the different headings which are thus formed, and by overhand stoping cut away the orey material. These lodes are often extremely soft, so, although only 6 or 8 ft. wide, the whole cannot be opened out at once. Thus in the Spanish mine of Linares [of which a drawing was exhibited], an opening is made in the centre near the top, and two others in the sides below, and strong timbering is required. It is, however, always advisable to work the whole breadth together when possible, as that is much cheaper than to get it by narrow workings, but when this is attempted the character of the rock must be carefully watched from fathom to fathom, to see how far it may be justifiable to expose the men to the danger arising from the fall of large masses, which are liable to break away when the opening below becomes too large. In even moderate-sized lodes, as at the East Wheal Rose, which is 5 ft. 6 in. wide, it is sometimes impossible to make the opening the full width of the lode, as it is situated in a running ground, and much timber has to be put in. In cases of this kind a system of arching at intervals is sometimes adopted with success when timbering cannot be brought in with equal advantage. Therefore, in the county of Wicklow, where beds of iron pyrites occur, from 18 to 24 ft. in width, this system is carried out to a great extent. Again, it sometimes happens that masses of the lode are left here and there between the walls to keep them asunder. Sooner or later these natural props are taken away for the sake of the ore they contain, and if this is done incautiously the result is that great cracks reaching up to the surface are caused, and much damage is sometimes done in this way to the buildings or works above ground.

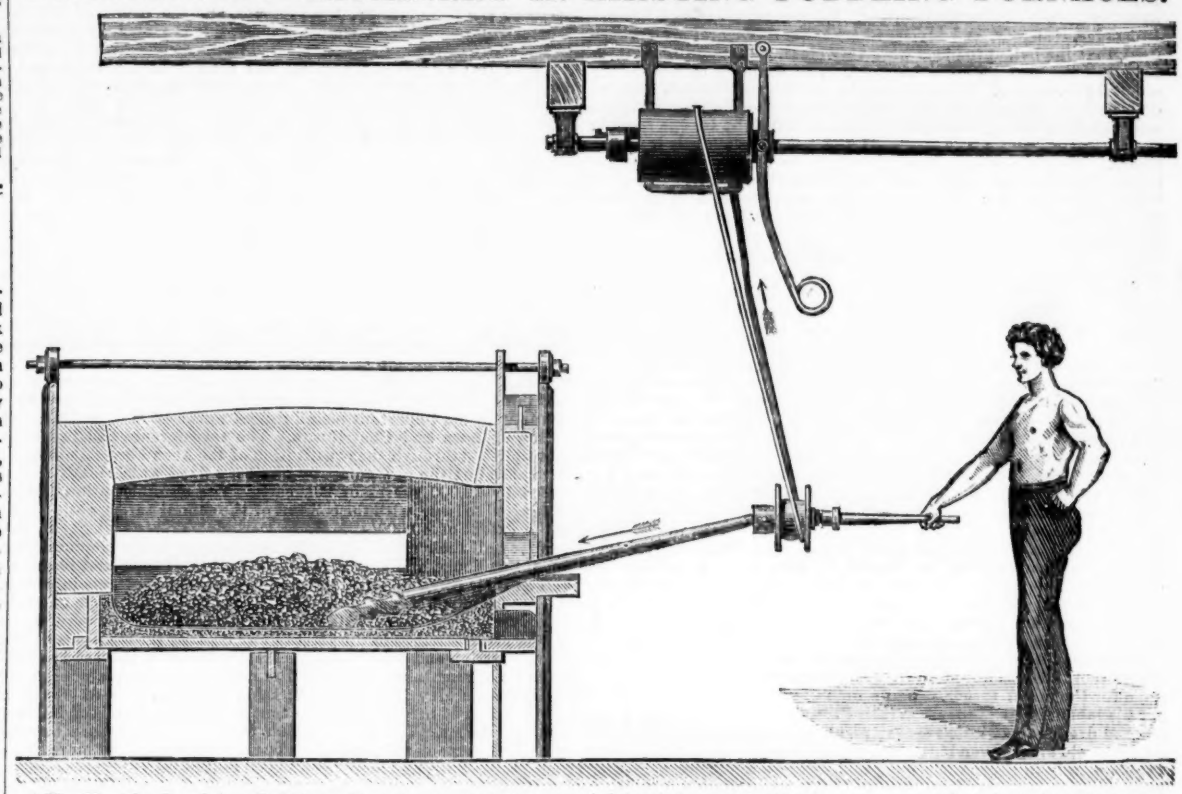
At the same time it is important to look at cases in which exceptionally wide lodes have been worked by other methods. If we take some of the Cornish veins where parallel branches or strings of tin ore occur, making a width together of 16 or 18 ft., we shall probably find the ore is small in quantity compared with the mass of material with which it is associated. A case of this kind is furnished in the Carn Brea Mines, where the North Druid and South Druid lodes come together. The first thing to be done in such a case is to permanently secure the levels, and then, having sunk a winze, we shall begin at the bottom level a series of stopes which reach to the level above, putting in stull pieces of sufficient strength. The ore is then picked out, and the rubbish, or attle, carefully arranged to fill up the vacancies made. Then having effected this on one side of the lode, if appearances are similarly good on the other side, openings of a like character may be made, and the same process repeated. This principle of taking out the material in stages and by piecemeal, as it were, and working across is a very important one, not only in metalliferous mines but in others. The other question, however, is when so large a proportion is taken out whether it will not be necessary to introduce from the surface other material for filling up the vacant spaces. This may be sometimes done with great advantage, and where large deposits have to be dealt with it is a question which must be faced. Again it is a point to consider whether it may not be better to sink several stages one after another, or whether we should go down to a certain depth, drive a new level, and begins a fresh series of stages. Ordinarily, when the mineral to be worked is uncertain as to quantity, a prudent manager will prefer the latter course. At the Foxdale Mine, in the Isle of Man, in the 90 fm. level the lode is 40 ft. in width, and so very soft that only a part can be removed at a time. They, therefore, drive the level in the richest part of the lode, with cross-cuts now and then to either side, when, if appearances are favourable, levels may be run, and the intermediate space got bit by bit. It is impossible in metalliferous mines to do more than this, except keeping the works so advanced that when one part is exhausted there will be further ground explored ready to come into play. The Wicklow sulphur mines furnish a case where the deposits of a continuously homogenous material are continued for a great length and depth, and at a width on an average of 20 ft. It is, therefore, necessary to leave large portions of the valuable material as props, the alternative being to put in timbering so strong and powerful as scarcely to be thought of. Some years ago an attempt was made to remove some of these arched masses of material, but the result was a subsidence at the surface enough to swallow up whole houses. Take another case, that of the curious hematite mines at Ulveston, where it is uncertain how far the metallic mass reaches down, since it has been explored to a depth of 100 fms., and the bottom has not yet been reached. It is impossible to expect that a manager would expend thousands upon thousands of pounds in sinking to the bottom before he begins to get the mineral; accordingly they sink only so far as to enable them to begin a succession of stages.

The system they adopt is this:—The shaft is sunk in the solid ground, near a side of this immense mass of metalliferous material, the upper portion being clays, sands, gravels, and other alluvial deposits, and then limestone. This shaft is intended to be permanent, and therefore is properly lined and secured. As soon as a sufficient depth is reached a cross-cut is driven out away from the limestone into the iron ore, a distance of 150 ft., without coming to firm ground again. The drift has to be well timbered. If the ground had been worked as usual, spilling would probably have been resorted to, but at the present time, for the purpose of obviating this as much as possible, the cross-cuts are driven at intervals. Occasionally they come upon great lumps or detached masses of limestone, &c., and as it would be a waste of time to cut through them the level is carved, to avoid the obstruction. From the level a rise, called a "cockloft," is made, and the ore worked out in three stages, one above another, the uppermost first, the middlemost second, and the undermost last. The shaft is then sunk lower, and another section worked through in the same way. This system saves great sums in timbering and narrow working, but it has some dangers peculiarly its own. When quicksands or other running grounds are overhead, they sometimes, despite of all precautions, break through and crush into the workings. In such quantities and with such force that the timber is destroyed, and the shaft filled up to a considerable height. These vast irregular deposits, wherever they occur, whether in England or abroad, will always have to be dealt with according to the peculiar geological circumstances of each. Thus, at Rammelsberg, where the deposits are irregular, the works are often very broad, but the ground is extremely hard, and fire-setting has to be resorted to, a process I have already described as one requiring great caution and skill in managing the air channels. The level is carried in with elliptical arching, whilst above the arch the attle is built up around them, and sometimes material is brought from the surface, so as to enable the men to stack their fires under favourable circumstances.

Another example is offered by the quicksilver mines of Almaden, in Spain, where the thickness of the lode is from 30 to 36 ft., and something like the Foxdale dimensions, where the works are carried on upon a scale of regal magnificence, and upon a system calculated to secure the permanence of the mines in a remarkable degree. Two levels are carried through the lode, one above the other, at about its middle, with occasional cross-cuts. The working is from below upwards, and on a most economical principle. The quantity taken out at once is about 4 varas in width, a vara being between 2 and 3 ft. English. Arches of stone are then built in, forming a foundation for what is to come. A number of winzes are next sunk, and then the whole orey material is got out, its place being filled with stone walling, and the intermediate empty spaces secured so as to ensure perfect safety. Another remarkable instance of this method of working any large deposits may be quoted as showing that, however the general practice of one country differs from another, they will follow very different plans of working under precisely similar circumstances to bring about the same results. Indeed, a great waste of time and money might often be avoided if men would not set about working these great, repositories without knowing what has been done elsewhere. Some time ago I visited some extensive iron mines in Bavaria—at Arztoy, near Wrinnedel—where a system is carried out which I do not remember to have seen described in any book. The lode is between 60 and 70 feet in width, may be fairly called a contact-lode, between two kinds of rocks of a very soft nature, requiring only pick-work, but in which especial care must be taken. Ground of this kind is sometimes very deceptive. It is hard at first, and may even require blasting, but will not stand for any length of time when opened out. This is particularly the case with some of the hematite iron ores, the laminated structure of which goes rapidly to pieces. Again, in the Hartz Mines the ore is extracted by means of transverse cuttings (German, "querban.") The Spitaler, or Hospital, lode at Schemnitz, in Hungary, which is from 50 to 60 feet wide, is worked on the same principle, by carrying a drift across from wall to wall. The intermediate masses are then extracted in three alternate portions. The middle one is taken first, and the space being filled in with stone the other portions are won.

NOVEL CHEMICAL COMPOSITION FOR PRESERVING WOOD AND METAL.—The composition, invented by Messrs. G. and P. VIVIEN, of Honfleur, France, is composed of about 60 parts of sulphate of carbon, and 40 parts of colophony (common resin) mixed together until the affinity of the two lodes is perfect. The resulting liquid product can be used with advantage upon wood or metal, parts of which are in water or in the ground.

PUDDLING BY MACHINERY IN EXISTING PUDDLING FURNACES.



"The Use of a Revolving Rabble in the Common Puddling Furnace" formed the subject of a very interesting paper read before the Society of Arts, on Wednesday evening, by Mr. F. A. PAGET, C.E. Commencing with the statistics of British puddling, he explained that there are more than 7700 puddling-furnaces (and 6500 actually at work), costing about 150*l.* each, and, therefore, representing a capital of 1,000,000*l.*, erected in Great Britain. At each of these furnaces two puddlers and two underhands or assistants are employed, thus making up an army of 26,000 men at work for 12 hours daily at the most laborious and arduous occupation in the whole range of manufacturing industry. For each ton of puddled bar at the very least an equal weight of coal is consumed. The amount is notoriously exceeded in almost every puddling-furnace, and Mr. Paget observes that if, without in any way altering the mode of firing of these furnaces, we could (say) by any mechanical aid accelerate the puddling process by only 25 per cent.—that is to say, if the 4,500,000 tons of puddled bar could be produced in nine months instead of twelve—one quarter of the 4,500,000 tons of coal would be saved. At the present price of coal of 1*l.* per ton this would amount to a saving of 1,137,500*l.*, the puddlers themselves being also allowed to earn in the nine months the same amount they would otherwise make unaided in twelve; and no regard being had to other advantages to the masters and men.

The process of hand puddling in the ordinary reverberatory furnace is described by Mr. Paget as divided into four stages:—1. In the melting process the pig-iron, together with a proportion of hammer-slag, is charged on the bed, previously lined with either puddling mine, bull-dog, or both, and plastered over with wet hematite ore. As the cast-iron gets softened by the heat it is broken into smaller pieces, and stirred up with the cinder. This is done by the hand rabble, which has to be continuously moved over the whole surface of the bed. This stage lasts about 35 to 40 minutes.—2. In the second, or boiling, stage the iron has to be violently rabbled in order to bring it into a state of ebullition, or boiling. In this operation the puddler has to exert himself very considerably, working the rabble to and fro, and from side to side, over the bed.—3. "Coming to nature." The iron now begins to thicken, and to get tougher and tougher; the "boil" stops, and it "comes to nature," or begins to assume the consistency of heated wrought-iron. The puddler works it in this pasty consistency from side to side of the furnace, separating it into different pieces.—4. Balling. The wrought-iron is now collected into balls, varying in weight and size, ready to be taken out of the furnace to be hammered or squeezed into blooms. This stage takes about ten minutes. In the ordinary mode of puddling, should the pig-iron get entirely melted on the bed, it is a disastrous circumstance for the puddler. The bath of metal, with its even surface hidden under the lighter cinder, offers very slight surfaces of contact to oxidation. To meet this he is forced to very violently exert himself in stirring up the metal; and he is obliged to shovel in quantities of hammer-slag, cinder, or other sources of oxygen, which cool down the metal and lower the quality of the product.

As the energy of human labour thus has its natural limits, the present process of manufacturing wrought-iron has to be kept as closely as possible within those limits. One of these means is that known under the name of "refining," or "fining," at least a portion of the pig-iron, before charging it into the furnace. A novice would naturally enquire why the metal to be puddled cannot be run directly from the blast-furnace on to the bed of the puddling-furnace, with the great attendant saving of fuel that would evidently result. This has, in fact, been patented and tried more than once; but the work of puddling out the carbon is thereby so much increased as to be quite beyond unaided muscular power. On the contrary, the grey pig-iron from the blast-furnace has to be melted up again.

Mr. Paget maintains that the charge is fused in the puddling furnace solely to relieve the puddler. As the iron takes from 30 to 40 minutes in melting, and requiring from him comparatively less work, it gives him time to rest from his previous terrible exertions; while the surface of the pig-iron, as it is melted down and broken up, gets partially decarbonised. On the other hand, if the fusion of the pig-iron be too slowly effected great scaling occurs, with an unnecessary increase of loss. According to an assumption greatly in favour of the furnace, it takes an equal weight of coal to puddle an equal weight of iron. In that case more than 117 lbs. of coal will have been burnt in merely melting up. Now, only a very extravagant cupola would take more than 50 lbs. of coke to do this work, and the price of the best Durham coke is only about 24s. at the ovens. Mr. Jonathan Ireland, Manchester, states that in his cupolas only 1½ cwt. of coke per ton of iron is burnt when melting all day long, and that the average loss of metal is 5 per cent., being with Cleveland iron a little more. It has been found in the Bessemer process that the melting cupola rather adds to than diminishes the carbon. An advantage in this case, this would in the puddling-furnace much increase the labour, and without the application of power to the rabble iron melted in the cupola would be as impracticable as that run from the blast-furnace. It is, in fact, well known that the reverberatory furnace used in puddling is a very bad melting apparatus. Another advantage of the cupola is that it keeps back the sand and pebbles that too often injure by their silicious contents the nature of the slag in the puddling-furnace.

Referring to puddling-machines with oscillating rabbles. The difficulties attending hand-rabbling set thinking minds to attempt to find a remedy applicable to existing furnaces. The first of these attempts was made by Mr. Schafhäutl, now Professor at Munich, whose name is well known to metallurgists by his puddling "physic." Prof. Schafhäutl, as long ago as 1836, actually puddled iron with his machine at the Tividale Works, near Dudley. His leading idea was to take the common puddler's rabble, connecting it with machinery for giving it longitudinal and transverse motions imitating those when in the hands of the puddler. Prof. Schafhäutl states that his machine failed to gain general acceptance not so much from mechanical causes as from lack of money. Mr. G. Beard has stated at the Institution of Mechanical Engineers that he "had found the iron puddled by machine as good as that worked by hand when the pigs used with the machine were 3s. or 4s. per ton less in price than those used in hand puddling." At the same time, these machines are open to objections, amongst which the considerable first cost and wear and tear must figure. The bearings have a tendency to heat, and the gearing to break. Any hole in the bed, or anything too much obstructing the oscillating tool, often results in a breakdown. As the iron thickens it is also driven by the rabble to the sides of the bed. The oscillating rabble necessarily does not cover the whole surface of the bed, at any rate of an old furnace, and much is thus left to be done by the hand rabble. There is then the difficulty of using a rabble like this during the third stage of the process. When the iron "comes to nature," as the puddler feelingly terms it—from his encountering at the end of his rabble the tough, pasty, infusible mass resulting from the elimination of the carbon—the resistance to the machinery is so great and irregular that it must be stopped. Two different kinds of the most successful machines with oscillating rabbles were lately tried by the Committee on Puddling of the Iron and Steel Institute. According to the figures officially given, it appears that, in the one case, there was an interval of fifteen minutes between removing the mechanical rabble and getting the iron ready to ball; and, in the other, thirty-two minutes. During these intervals, the puddler had to work with the hand-rabble on the iron while "coming to nature," or getting tougher and tougher, affording the greatest resistance and the hardest work. This mechanical difficulty also results in a greater "loss" in the furnace, especially with heavier charges than can easily be balled by hand.

Any puddling machinery must, as Mr. Paget very truly remarks, be essentially simple, and not liable to get out of order by the roughest and most careless usage. This simplicity, required by the men, is also required by the furnace, the high temperature of which, with the attendant rapid current of air passing through, must not be interfered with. A glance at the accompanying illustration will afford an intelligible idea of the apparatus of Mr. Dormoy, which has already been referred to in the *Mining Journal* in the report of the recent meeting of the Iron and Steel Institute. A common belt, driven from shafting about 6 ft. above the furnace, rotates the sheave, loosely jointed at one end to the puddling rabble, and at the other turning on a pin held in the hand of the puddler. To prevent any jarring action to his hand the pin he holds may be wound round with spun yarn or gasket, embraced by a leather or india-rubber tube. The strap thus rotates the rabble, supports part of its weight like a suspension link, and acts as a universal joint, much as in the familiar instance of the rotating hair-brush. The belt must evidently adapt itself with ease to the great variety of positions that have to be taken by the tool in every part of the furnace, to the necessity for removal when too hot, and to the progressive changes in the metal. Mechanism could easily be applied to the rotating rabble in order to work it regularly to and fro, but this additional complication has not been found necessary. Its great speed—from 300 to 800 revolutions per minute for white pig, and from 800 to 1000 for grey metal—is found to give all the mechanical energy required. The end of one form of rabble, about 4½ in. in diameter, when revolving with 500 revolutions, necessarily has a speed at its circumference of nearly 600 ft. per minute. On the other hand, the iron, even when boiling, is not thrown up. The centrifugal impulses are not sufficient to overcome the cohesion of the hot metal. It is estimated that from ¼ to ½ horse power per furnace per hour would be needed, but the draught would necessarily increase towards the end of the heat. There is no bearing near the furnace necessarily liable to get hot, no gearing to break on any sudden resistance, and the strap itself acts in its usual way as an admirable friction-brake. It is difficult to imagine how the apparatus can come to grief in any other way besides breaking the strap. For such a case a spare belt is kept hanging on the shaft, or the puddler could even go on in the ordinary way. If kept well greased, however, the belt lasts from three to four months without renewal. Any diminution in speed can be obtained by slightly relieving its weight off the belt—thus allowing more or less slip. On the other hand, any unusual resistance can be overcome by the puddler pressing the tool down on the belt. Simply by crossing the strap the rabble can be rotated from left to right, or *vice versa* alternately, as required. The tools, in spite of their extra weight, are easily removed from the furnace by taking them off the strap by means of a hook on a light chain suspended near the furnace from the roof, and laying them on small trestles, about 18 in. in height and width. The rabble can thus be changed in 30 seconds. There is no chance of the tool disturbing the fetling, as it merely rests loosely with its weight on the bed, just as in hand-working. Experience has shown that the revolving rabble involves no change either in the plant of the works or in the habits of the workmen; it could be adapted in a couple of hours to any common furnace, and Mr. Paget has designed an apparatus that could be at once applied.

Even at the very beginning of the heat, the greater command of puddling power has an important result. The "yield" is found to be greater, as there is less liability of the pig-iron while being melted in the furnace getting burnt therein for want of regular stirring. But in one very important point it is more useful than any other known apparatus applicable to a common furnace. Even when the iron is "come to nature," the tool can be worked like a drill through the tough pasty mass. The operation can be thus entirely completed if the mass has not to be balled. If balls have to be made only about ten minutes' work with the ordinary hand rabble has to be

done at the end of each heat. Further, it is well known that the more the iron has been worked, and the better it has been puddled the less is the necessity for forming it into well-shaped balls, as it is so easily kneaded under the hammer. It has everywhere been noticed in France, Hungary, and Styria, where the revolving rabble has been used, that the balls produced were very close, withstanding remarkably well the shock of the hammer. The ordinary rabble is only about 1¼ in. square. It, consequently, easily gets too hot, then requiring to be taken out. The rotary rabble, with a diameter of 2½ in., and weighing about 80 lbs., lasts from a fortnight to one month; some have even lasted as long as six months, though this is exceptional. With charges of even 800 or 1000 lbs. of grey pig, the working of the revolving rabble only lasts from 20 to 30 minutes; with white pig, from 10 to 15 minutes. The metal is then in separate pieces, almost ready to be taken out. No pig-iron, however much carburetted, or otherwise alloyed, has been able to withstand its action. Either soft fibrous iron, fine-grained iron or steel, can be produced according to the wish of the puddler.

Mr. Hutchinson (of Pease, Hutchinson, and Co.), who first invented and experimented with the rotating rabble, though the experiments were never made public, states that with his rotary rabble he "could puddle a heat of grey iron in an hour, and with very little labour on the part of the puddler." He considers "that, by the adoption of some such simple contrivance as this, in conjunction with the plan of working three shifts instead of two in the 24 hours," "a clear saving of 10s. per ton on puddling could be effected, without the complete and immediate substitution by costly machinery of the puddling furnace at present in use." At present the Cleveland puddlers finish only six heats per shift of twelve hours, or one heat of about 4½ cwts. per two hours, instead of the one heat per hour cited by Mr. Hutchinson. Supposing that during the proposed shift of eight hours they turned out only six heats, or eighteen heats instead of twelve in the twenty-four hours, this would be equivalent to increasing the rate of production of the common puddling furnace by more than 33 per cent., or one-third. In other words, the same furnace, with the same amount of coal, would produce in eight months the same amount of iron it now turns out in twelve. This would be equivalent to a saving in coal alone of more than one and one-third million of pounds sterling per annum, without reckoning the gain in time. Mr. Paget observes that a tool like this would do for the puddler what the slide-rest has done for the metal turner. While actually increasing the demand for his labour, the slide-rest has raised the metal turner from an overworked drudge to a skilled operative, able to work at his trade from youth to old age. Even if the ironmasters were to use the revolving rabble merely to rlieve their men, and without requiring a greater number of heats from them, they would gain enormously.

It is suggested that in puddling with Mr. Dormoy's rabble the charge should not be melted in the furnace, so that the furnace might be kept puddling continuously. As already observed, says Mr. Paget, the reverberatory furnace is notoriously a bad apparatus for melting. In melting for the Bessemer converters, for instance, it has been superseded by the cupola. For reasons adduced, the use of the rotary rabble should evidently be combined with that of a melting cupola. The men have sufficient command over the work to be able to overcome any extra carbon in the metal. In fact, if the metal be charged in a molten state, the heat can be completed in at the most half an hour or forty minutes. With thorough hand puddling, the "yield" has been found to be increased beyond the charge of metal when rich fettling has been employed, just as in Mr. Danks's furnace. The true way to use this tool would, of course, be, not merely to melt the metal in a cupola, but to increase the charge, and with it the capacity of the bed, and to use a furnace with two doors. Double furnaces have often been tried; but they have been found impracticable with manual labour, from the self-evident cause that the work is so much increased. In conclusion, Mr. Paget remarks that there seems to be three principal reasons why mechanical puddling—or, in other words, good puddling—produces such good iron. The operation is (1) completely carried out; (2) the puddled bar is really homogeneous; (3) the multiplication of the surfaces of contact intensifies the purifying chemical reactions. And if these conclusions be correct it may be hoped that no time will be lost in making mechanical puddling general.

FOREIGN MINING AND METALLURGY.

The extraction of coal is still carried on with great energy and activity in the French coal basins of the Nord, the Pas-de-Calais, the Centre, and the South; this is especially the case at St. Etienne and Rive-de-Gier. Paris, where the state of financial affairs leaves something to be desired, sends only very few orders for deliveries, although the stocks in warehouse are inconsiderable. On the other hand, the proprietors of the sugar-works as well as the brick-works and lime-burning-works are laying in important supplies. The orders of the basin of the Loire continue important, and afford employment for a very large number of working people. Quotations of coal have not experienced any material variation upon the French markets. The dividend of the Grand' Combe Mines Company for 1871 has been fixed at 2*l*. 8s. per share, payable half June 15, and half December 15, 1872. The dividend of the Malfidano Mines Company for 1871-2 has been fixed at 1*l*. 16s. 8d. per share. The Carmaux Mines Company has been paying this month the balance of its dividend for 1871, or 12s. per share.

A certain slackening in affairs, such as is usually observed upon the close of winter has been noticed this week in the Belgian coal trade. Orders from Paris have especially fallen off. Several of the Belgian canals will be temporarily closed, as usual in July and August. Coke has realised 1*l*. per ton in the Liége basin, while it realises 1*l*. 0s. 10d. per ton, and even more, in the Charleroi basin. Coke is everywhere scarce, and in more and more demand. The exports of Belgian coal from Belgium in February amounted to 355,489 tons, of which 328,388 tons went to France, and 22,901 tons to the Low Countries. During the same month Belgium exported 61,772 tons of coke, of which 32,654 tons went to France, and 29,083 tons to the Zollverein. The imports of coal into Belgium in February amounted to 7883 tons, while those of coke were 834 tons.

At Paris, rough Chilian copper, delivered at Havre, has made 102*l*.; ditto in bars at Paris, 104*l*.; ditto in ingots, 100*l*.; English tough cake, 100*l*.; and Corocoro minerals, pure standard, 102*l*. per ton. At Marseilles, Spanish copper has brought 86*l*.; refined Chilian and Peruvian, 98*l*.; old red copper, 84*l*.; and rolled red copper in sheets, 108*l*. per ton. At Rotterdam, Drontheim has made 50 fls. to 52 fls. At Marseilles, Banca tin has brought 168*l*., and English and French 170*l*. per ton. At Paris, Banca delivered at Havre or Paris has been quoted at 172*l*.; Straits delivered at Havre or Paris, 169*l*.; and English delivered at Havre or Rouen, 167*l*. per ton. At Rotterdam, Banca has realised 97 fls,, and Billiton 97 fls. At Paris, French lead delivered at Paris has realised 20*l*. 12s.; Spanish ditto delivered at Havre, 20*l*. 8s.; and English delivered at Havre, 20*l*. 4s. per ton. At Marseilles lead in saumons, first fusion, has brought for consumption 19*l*. 4s. per ton; second fusion ditto, 18*l*. 12s.; lead in shot, 20*l*. 8s.; and rolled and in pipes, 20*l*. 8s. per ton for warehousing, and 21*l*. 4s. per ton for consumption. At Rotterdam the quotation for Stolberg has been 12¾ fls.; for Spanish, 11¾ fls.; and for German of various marks, 12 to 12¼ fls. Silesian zinc has made 23*l*. 4s. per ton at Paris; other good marks delivered at Havre, 23*l*. 12s. per ton; and ditto delivered at Paris, 23*l*. 4s. per ton. The quotation for rolled Vieille Montagne zinc at Marseilles has been 32*l*. per ton, with a discount of 3 per cent. At Amsterdam, Silesian has realised 13 to 13¼ fls.

The intelligence received as to the French iron trade is favourable, great activity prevails, and the advance in prices continues. Pig is extremely scarce. Rolled iron from charcoal-made pig is quoted at 11*l*. 4s. to 12*l*. per ton in the Haute-Marne, while hammered iron brings 12*l*. to 12*l*. 8s. per ton. According to the latest information received, it appears that M. Ozenne and the Minister of Foreign Affairs in Belgium have come to an understanding not to make any change in the present tariffs levied on the importation into France of coal, pig, and iron. The average price of the rails ordered in France during February and March, 1872, was 8*l*. 2s. 6d. per ton for iron rails, and 12*l*. 10s. per ton for Bessemer rails. Belgian quotations were much higher during the same period. The bulletin of the Committee of French Forgemasters refers to a new procces of MM. Combescot and Langlade for utilising the gas of blast furnaces in connection with the puddling of pig. MM. Combescot and Langlade use a Siemens furnace, modified so that they have succeeded in regulating perfectly the temperature, the pressure, and the course of the gas. The process applied in Carinthia involves, it is stated, an ecomomy of 2*l*. to 2*l*. 8s. per ton of manufactured iron. A considerable demand for old rails on American account has already been noticed, and it may be observed that M. Braines, inventor of a process for the utilisation of old rails, has decided to take out patents in Europe.

The advance in the price of pig in Belgium continues, casting pig having been carried to 6*l*. per ton, while refining is at 4*l*. 12s. per ton. Merchants' iron No. 1 is at 9*l*. 12s. per ton. Plates have also risen to 12*l*. 16s. per ton. At the same time there are not wanting apprehensions that prices have been carried to an exaggerated level. The imports of steel of all kinds into Belgium in February amounted to 928 tons, against 683 tons in February, 1871. The imports of iron and pig into Belgium in February amounted to 12,000 tons, against 3000 tons in February, 1871. The exports of steel from Belgium, which had been 1335 tons in February, 1871, were only 741 tons in February this year. The exports of iron, on the other hand, from Belgium in February were 19,038 tons, against 10,972 tons in February, 1871. It is announced that the cylinder foundry of MM. Bonnet and Co. has just been fusioned with the Montigny-sur-Sambre Rolling Mill Company (MM. Pierard Frères and Co.) For some time past there have been rumours as to the intended transference to a company of the important metallurgical works of MM. de Dorlodot Frères, of Acoz and Chatelineau. The transference has just been accomplished through the constitution of the Acoz Forges Company. The capital of the new company has been fixed at 240,000*l*., represented by 12,000 shares of 20*l*. each. The administration is also authorised to issue, with the consent of the commissaries, obligations to the extent of 40,000*l*. MM. de Dorlodot Frères transfer to the company all their metallurgical establishments in the communes of Acoz, Bouffioulx, and Chatelineau, with all their tools and plant, as well as their concessions of ironstone mines and contracts in course of execution. MM. de Dorlodot will receive as the price of their *apport* 9400 shares, or 188,000*l*. The remainder of the capital, or 52,000*l*., is subscribed to the extent of 32,000*l*. by the members of the administration and the direction. MM. de Dorlodot Frères have subscribed the remaining 20,000*l*. The new company commenced its operations on May 1, 1872; its duration has been fixed at 30 years. The direction of the works will be continued in the hands of M. Ferdinand Vincent. The orders which the new company has to execute on the commencement of its operations amount to more than 10,000 tons of pig, and more than 55,000 tons of rails and accessories; the whole of these orders have been taken at very suitable prices, having regard to the quotations of the day.

FOREIGN MINES.

SILVER PLUME.—The secretary has forwarded us for insertion the following extract from their manager's last letter, bearing date Georgetown, April 19:—"I had intended selling the ore I had on hand here, but when I had an assay of it found it too rich—over 400 ozs. I have at least two car loads, or 20 tons, ready for shipment. The sacks you sent, and the 1000 from New York, are all here, but the roads between this and Denver are at present impassable for wagons."

BIRDSEYE CREEK.—J. A. Stone, April 10: Uncle Sam: The run was twenty-six days, and I cleaned up 185·60 ozs. which was only 833 fine. I send you to-day cost-sheets with accounts. As in the previous run, I lost considerable quicksilver, and caught a great quantity of lead, solder, and brass. The claim has been running as energetically as ever, and, I believe, were it not for the base metals, which take away a large quantity of the gold and quicksilver, the run would have yielded fully double what it did. I shall make another partial clean-up in a few days. I think by making shorter runs, and retorting the quicksilver each run, it will pay better than long runs, also the quicksilver will not lose as badly as in long runs.—Brown's Hill: Run twenty-six days, actual washing was only twenty days. I am now putting in a blast in this claim, in order to bring up the hard bottom, which I cannot cut for water.—Neece and West: Run was the full month, but only about twenty-one days washing. There is considerable expense in the March accounts, which really should come in April expense, such as powder and material not used. I put in a blast of 70 kegs of powder, which did first-rate, and the April's accounts will get the benefit of it. I have received for water of Hawkins, $500; and of Hubbard, $260: total to date, $760. I send you to-day the abstracts for tunnel and ditch for January, as requested. I received a letter from Mr. Chadbourn saying he had resigned for me as superintendent of Birdseye, for which I am very glad, and as Mr. Bowe will shortly arrived, I trust he comes empowered to appoint someone in my place.

— The directors have received a telegram from their superintendent giving result of a clean up as follows:—"Uncle Sam, 30 days' run, profit $3000; Brown's Hill, 30 days' run, profit $750; Reece and West, 30 days' run, profit $500—$4,250. I send you a remittance of $2000."

UTAH (Silver).—J. R. Murphy, April 14: Dartmouth: Sinking incline shaft from surface on a vein of carbonate of ore of 18 inches in thickness, assaying in silver $31·41, $25·12, $22·00 per ton, and in lead 75 per cent., 46 per cent., 39 per cent.—Red Warrior: Driving the level eastward from the bottom of winze No. 1, on this mine, to connect with the main shaft; the level is now in 15 ft. on the vein from the bottom of the winze; the veinstuff consists of about one-half galena and remainder iron pyrites. Contracts are let to push 50 ft. of this level at $20 per foot; average assay of ore from the level, $17·50 per ton. The winze No. 2, on the last-named mine, is being sunk by contract at $18 per foot for 50 ft. from the present depth of 26 ft.; ore still continues the same as in the last report; average assay of silver, $22·50; lead, 54 per cent. The main working shaft is timbered complete for a depth of 80 ft.; sinking still continues to strike Red Warrior Mine. General improvement in the mines, with every evidence of continuing downwards. The canon road to the works is impassable. Weather bad, still snowing at intervals.

— J. R. Murphy, April 18: The first car load of the hoisting machinery, &c., has only arrived at the railroad depot to-day. The balance will be there by the 22d inst. The only obstacle to my getting it in its place now is the impassability of the roads up the canon to the works. The first instalment of our charcoal is to come to the railroad about the 25th inst. The Red Warrior Mine continues to improve in depth; will commence to use the calciners on the 22d unless further storms ensue. We have had horrible weather for the past two weeks. Are endeavouring to start smelting by May 1; there seems to be nothing in the way but the elements, which are anything but propitious for this season of the year. I hope soon to report progress of smelting, &c.

KANSAS.—J. Williams, April 17: We have been hastening down the main shaft during the past fortnight with all possible dispatch, and our progress has been everything that could be desired, having sunk in this time 10 ft. 6 in.; the shaft is now about 22 ft. below the 190 feet level. Within the last few days we have discovered branches in the south side, which is fast uniting with the main part; this has given the shaft an improved appearance, and also indicates that we are not far off from another shoot of ore. We shall push down the shaft with all diligence, believing we shall have success in the bottom of no ordinary character. In the 190, east of the main shaft, the lode is of immense size, being over 12 ft. wide; the north part is poor, consequently we have turned our attention to the south part. The portion carried is about 5 ft. wide, producing mill-tuff of low quality; having the greatest length of ground in this direction, I think the chances at this point are of making good discoveries, therefore shall urge it on without delay. The two stopes east and west of main shaft, in the back of the 190 feet level, are still producing fair quantities of mill-stuff. The north lode, which has stood undeveloped ever since I have been here for the want of being in a proper position to work it, will at once have our attention; the shaft being down to a reasonable depth we shall commence a cross-cut towards it, and hope to intersect it in about a month from this time, and if found good, as in all probability it will be, will very much enhance the value of the mine, by giving us two lodes to work on instead of being confined to one. You will see by the foregoing report that the points in operation, with the exception of the stopes, are not rich, but I find from observation that this is just a sample of what the mines in the mountains are—make short bunches of ore—but if we may judge from the promising appearance of the lode in the main shaft, I think we may come to the conclusion that it is not far from a bunch of ore; also the south lode when reached will open up reserves, and greatly assist to increase our returns. Gold sold for the fortnight $2240.

INDEPENDENCE.—April 18: The gold produced from this mine and sold in San Francisco by Messrs. Cross and Co., the agents, since the mine was transferred to the London owners is $26,664, equal to 5333*l*. sterling; and the superintendent reports that the part of the vein driven on in the adit level west is 6 feet wide, and is looking decidedly better, and that a new contract has been let to drive on it at 3*l*. 6s. per fathom. The new east shoot adjoining the Sierra Buttes Mine holds good in the tunnel east and west, and the pay quartz is 2 feet wide; the ore in the shaft rising on this shoot shows an improvement in value. The superintendent also reports that with regard to the prospects of the mine in depth the quartz in the middle shoot, after passing the 100 feet level, becomes gradually better, and that in the pump-rod shaft, the deepest part of the mine, it is as good as any extracted below the adit level. The winter still continued, therefore neither the proposed improvements nor the erection of the machinery could be commenced, although everything was being got in readiness for starting on them.

LUSITANIAN.—T. Chegwin, April 23: Palhal: The lode at Taylor's engine shaft, sinking below the 150, has not been taken down since we last wrote, when it was worth 5 tons per fathom.—Levels on Basto's Lode: In the 150, west of Taylor's shaft, the lode is 2½ ft. wide, worth 2¼ ton per fathom. In the same level east the lode is 8 ft. wide, composed of quartz and country; and in the 140 east it is also 8 ft. wide, and of the same nature. The lode in the 140 west is being cut off by the slide lode, so that there is nothing to value at present. In the 130 east the lode is 8 ft. wide, composed of quartz, and is of the same composition in the 120, east of River shaft, where it is 6 ft. wide. In the 110, east of the last-named shaft, the lode is 2 ft. wide, made up of schist and flookan. In the 90 east the lode is 1½ ft. wide, composed of soft schist. The lode is 2 in. wide in the adit west of Perez' shaft, at times yielding stones of ore. In the 38, west of the slide lode, on branch, we have no lode at present; it appears to have been heaved by another branch we have gone through, that looks like the Mill lode; and, from the general run of the branch, we calculate we have 4 metres to drive to cut it. The slide lode in each end of the 130 is 1 ft. wide, composed of flookan and schist.—Winzes and Rises: The lode in No. 89 winze below the 70, is 3 ft. wide, yielding stones of ore; and in the rise above the 90 against this winze, the lode is of the same size, but unproductive. In No. 91 winze, below the 140, the lode is 4 ft. wide, producing stones of ore.—Carrathal: The 60 cross-cut, north of incline shaft, is in a dry, hard gneiss rock. We are now driving the 60 cross-cut south, where the ground is not very hard.—Levels on Great Lode: In the 60, east of incline shaft, the lode is 1 ft. wide, and poor. In the 50 east the lode is 18 in. wide, composed of quartz and a little flookan, and in the opposite end 1 ft. wide, composed entirely of quartz. The 40 is going east on a lode 1 ft. wide, unproductive; and in the western end of this level the lode is split into branches of quartz. In the 30 east the lode is 1½ ft. wide, of no value; and in the 20, going in the same direction, 6 in. wide, and lessting out to a small stream of water. In the adit level west, on the flookan, the lode is 1 ft. wide.—Caunter Lode: The lode in the 10, west of incline shaft, is 1½ ft. wide, composed of quartz, spotted with blende; and in the 20 west also 1½ ft. wide, worth ⅛ ton of lead per fm. In the 30 west lode 2 ft. wide, spotted with lead.

MONTE ALBO.—William Martin, April 18: Su Ergiolu: The new shaft has now attained the depth of 12 metres below the No. 5 level; the lode is 1 metre 70 centimetres wide, composed of quartz, white iron, and good stones of ore. Driving north from new shaft, in the No. 5 level, the lode will yield ¾ ton of ore per metre. Driving south on the course of the lode in the same level, the lode is composed of quartz, schist, white iron, producing good stones of ore. The stope No. 4, in the back of No. 4 level, north of new shaft, will yield ½ ton of ore per metre. Julius Cæsar cross-cut is without change since my last report. In driving west on lode B the lode is at present poor. In No. 4 poleon level driving east the lode is 1 metre 70 centimetre wide, composed of quartz and schist, intermixed with lead and blende; and in the stope in the back of this level it will yield ¼ ton per metre.

LANESTOSA.—April 27: Esperanza: As reported in my last, not much has been done in the tribute pitches here for the month, owing to the men being away tilling their lands.—Augustina: The level from Bascula shaft has now been cleared to end (56·70 metres), which was much more than was expected: a vein 2 metres wide was passed through, 4 metres from end, and as this is directly under the large deposit called 1st Cruzero, I have no doubt whatever that it is a continuation of the same. We shall now drive around east to open up the vein, but I must confess to not being very sanguine as to the result now, seeing that the point has been partly registered before, of which we were entirely ignorant, and that we only find occasional rocks of calamine of an inferior quality. Before commencing this point we were assured that only a part of the distance had been driven, and entirely upon that supposition the work was recommenced, being a central point for proving the most promising calamine deposits in Lopha. A short time now will suffice to show what may be expected from this place.—Santa Lucia: Here we are laying tramway in incline level, preparing ground for and fixing whim. A few tons of calamine and lead have been raised from the stope in incline, but we must get the whim at work before opening up this fairly.—Ascencion: The men at Santo Tomas adit were prevented from working some time during the month by a run in the level, and have, therefore, not driven so much as expected. The end is still in hard, dark, marly limestone, and shows no signs of proximity to the lode yet; it is, therefore, very probable that the lode has taken a flatter dip than seen at surface. A few tons of calamine have been raised from what will be called No. 2 lode—*i.e.*, counting from the mouth of the adit inwards—and driving south it has a very promising appearance.—Glanrafon: The lode in adit here is very much harder, being in fact blasting ground now, whilst the lode is smaller, and has a less encouraging appearance.—Aurora: The men have only worked a small portion of the month here, having been removed to fill up the extra number required at Bascula shaft and level.—La Flora: The ground in the deep adit is till in a disturbed state, but the lode appears to begin to take its regular course now, stones of lead are occasionally met with, and a little lead is still being raised from the shallow adit, but the pitch in general is poor.—La Luisa: At Ventura adit we have been obliged to leave the cross-coure on which the level has been driven hitherto, as it was taking us too far out of line. Allowing for underlay of lode we have, according to dialling, still some 12 metres to drive. The ground is very favourable. At Cubello adit the lode has become very small and poor; small stones of lead are met with now and then, but the level may be said to be generally unproductive. No ore has been measured or weighed yet. I estimate the yield for the month to be 15 tons of calamine and 3 tons of lead.

LINARES.—April 24: The lode in the 85, driving west of Crosby's shaft, is small and unproductive. The ground is hard in the 75, driving west of Crosby's shaft, and the lode small and poor. The 75, driving west of San Francisco shaft, is opening up good tribute ground, and yielding 1¼ ton of ore per fathom. The lode in the 75, driving east of San Francisco's shaft, has improved a little since our last report; now yielding 1 ton of ore per fathom. In the 65, west of San Francisco's shaft, the ground is very hard, and the lode disordered and poor. The lode in the 55, driving west of San Francisco's shaft, is compact and regular, consisting of carbonate of lime and lead ore, and yielding of the latter ¾ ton per fathom. The lode in the 45, driving east of San Francisco's shaft, contains a few spots of ore, but nothing to value.—Los Quinces tos Mine: The lode in the 45, driving east of Addis's shaft, is large and strong, yielding good stones of lead ore, and worth ½ ton per fathom. The lode in the 45, driving west of San Carlos shaft, is improving in appearance and value, and yielding 1¼ ton per fathom. The lode in the 45, east of San Carlos shaft, is a strong open one, composed of carbonate of lime and lead ore, yielding of the latter 2½ tons per fathom. The lode in the 32, driving east of Judd's, is hard and poor.—Shafts and Winzes: No change has taken place in Peres' winze, sinking below the 32, since last report. Gracious winze, sinking below the 45, is a new winze, commenced below the 45, east of San Carlos engine-shaft, and produces 1½ ton of ore per fathom. The lode in Garcia's winze, sinking below the 45, has a little improved, worth 1 ton per fathom, but for the present it is suspended, the water having risen to this point. Carrascosa's winze, sinking below the 32, is going down in a large productive lode, worth 3 tons per fm.

ALAMILLOS.—April 24: The lode in the 60, driving west of San Rafael shaft, is large, worth ¾ ton per fathom, and the level is getting near the ore ground that is in the level above. In the 50, driving east of La Magdalena shaft, the lode is small and poor, and the ground is hard for driving. The lode in the 85, driving east of Taylor's engine-shaft, is large and unproductive, composed of quartz and granite. The lode in the 85, driving west of Taylor's engine-shaft, is also large, and somewhat improved, yielding ¾ ton of ore in a fathom. In the 50, driving west of San Yago shaft, the lode is greatly improved, and very large, worth 1 ton of ore per fathom; it is letting out plenty of water. The lode in the 40, driving west of Rica's winze, is small and unproductive. The lode in the 40, driving east of San Victor's shaft, is large, worth 1 ton in a fathom, but has fallen off in value. In the 50, driving east of San Victor's shaft, the lode is getting larger, containing lead, but not sufficient to value. The lode in the 40, west of San Victor's cross-cut, has been very changeable, and the lode became unproductive a few days since. In the 50, driving south of San Victor's shaft, the ground is hard and unfavourable for driving. The lode in the 20, driving east of Addis's shaft, has a good appearance, and consists of decomposed granite and lead, yielding of the latter ¾ ton per fathom. The lode in the 40, driving east of Crosby's shaft, is regular and compact, yielding 2 tons of ore per fathom, and is opening out a long piece of good ground. In the 50, driving east of Crosby's shaft, the lode is heaved by a small cross-course; the men are cutting north to intersect it. In the 40, driving west of Crosby's cross-cut, the men are making a plat; when it is finished the driving of the end will be resumed. In the 50, driving east of Crosby's cross-cut, the lode is small and poor, but speedy for driving. The 50, driving west of Crosby's cross-cut, is passing through a poor bar of ground, similar to that in the level above.—Shafts and Winzes: The footway-shaft, sinking from surface, is sinking east of Addis's, and is improving in depth, yielding 1½ ton per fm. The lode in Cobo's winze, sinking below the 30, has a better appearance, and contains good stones of lead, worth ½ ton per fm. The sinking of Alejandro's winze below the 40 has been resumed, and is passing through a splendid lode, worth 3 tons per fathom.

FORTUNA.—April 24: Canada Incosa: The lode in the 110, driving west of Henty's shaft, is small, containing a little lead, but not to value. The lode in the 100 fm. level, driving west of Judd's shaft, continues to open out very valuable tribute ground, worth 2½ tons per fathom. In the 80, driving east of Henty's cross-cut, the lode is rather small, and the ground still influenced by the cross-course. The lode in the 60, driving east of San Pedro's shaft, is looking better than for some time, and is showing indications of an improvement, yielding 1 ton of ore per fathom. In the 90, driving east of Addis's shaft, the lode is 1 ft. wide, composed of hard qaartz and lead ore, yielding of the latter ¾ ton in a fathom. The lode in the 80, driving west of Lowndе's shaft, is large, and spotted throughout with lead ore, worth ½ ton in a fathom. We now expect a good run of ore ground in the 80, driving east of Carro's shaft; the lode is worth 2 tons of ore in a fathom.—Shafts and Winzes: In Lowndе's shaft, sinking below the 80, the lode is regular and kindly, producing good lumps of lead ore, worth ¾ ton per fm. We have resumed the sinking of Serrano's winze below the 70, and hope to get it down with good dispatch; it produces 2 tons of ore per fathom. The lode in Carlos winze, below the 90, is open and kindly, worth 2 tons per fathom. The men are getting on well with sinking.—Los Salidos: The lode in the 110, driving west of Buenos Amigos shaft, is much larger than it was, and we expect it will improve in value shortly, now yielding ½ ton per fathom. In the 100 fathom level, driving west of San Carlos shaft, the lode is small, containing a little lead, but not enough to value. The ground is very hard for driving through in the 90 fm. level, west of San Carlos shaft. No change has taken place in the 110 fm. level, driving east of Buenos Amigos shaft, since last report. The lode in the 110 fm. level, driving east of Morris's engine-shaft, is large and strong, composed of quartz, clay, and lead ore, yielding of the latter 1 ton per fathom. In the 100 fm. level, driving east of San Pablo's shaft, the end continues to open a good run of ore ground, worth 2 tons per fathom. The lode in the 90 fathom level, driving east of San Miguel's shaft, is looking much better than for some time past, yielding 1¼ ton per fathom. In the 35 fm. level, west of Palgrave's engine-shaft, the lode is kindly, and of more value than when last reported on, producing 2 tons of ore per fathom. The lode in the 35 fathom level, driving east of Palgrave's engine-shaft, is small and of no value, and letting out a large quantity of water. Winzes: We hope to get Medina's winze, sinking below the 25 fm. level, down to the 35 fm. level this month. The lode in Lorente's winze, sinking below the 90 fm. level, is small, worth ½ ton per fathom, and the ground hard for driving. Moron's winze, sinking below the 100 fm. level, is going down in a large piece of ore ground, yielding 1½ ton per fathom. The lode in Calvo's winze sinking below the 25 fm. level continues to look well, producing 6 tons per fathom. In Gabrici's winze, sinking below the 100 fm. level, the lode is large and strong worth 3 tons per fathom, and is very wet for sinking.

WEST CANADA.—April 10: Wellington: The lode in the stope in the bottom of the 40, east of Rowe's shaft, will yield 2¾ tons of ore per fathom, and in another stope in the bottom of the same level 3 tons per fathom. Nothing has been done during the past month in the 60, east of Bray's, the men having been employed in putting in timber at the 35 fm. level.—Huron Copper Bay: In Bray's shaft, under the 60, we are sinking on the south part of the lode, which will yield 1½ ton of ore per fathom. The cross-cut south at the 50, west of Palmer's, is being driven through the south part of the lode, in which there is a little ore, but not enough to value; and the same cross-cut driving north has intersected a small branch (probably the north branch) which is poor; this end will be discontinued. In the back of the 60, east of Bray's, we have a stope yielding 3 tons per fathom. A stope in the bottom of the 50, west of Palmer's, yield 2½ tons per fathom; and in the bottom of the 35, 3½ tons per fathom. A stope under the 35, east of Bray's, yields 2¾ tons, another 3 tons, and another, on Fire lode, 2½ tons per fathom. A stope in the bottom of the 20, east of new engine-shaft, yields 2 tons per fathom.

[For remainder of Foreign Mines see to-day's Journal.]

CHEMICALS AND MINERALS.—(Messrs. J. Berger Spence and Co.) Manchester, May 8.)—Soda: Cream caustic, 60 per cent., 18l. to 18l. 10s.; white to 19l. 10s.; soda ash, 8¼d.; soda crystals, 7l. 15s.; bi-carbonate, 17l. 10s.; caustic, 8l.; glauber salts, 3l. 15s. to 4l.—Borax: Refined, 92s. 6d.—Nitrate of Soda: At 15s. 3d. to 15s. 6d.—Potash: Muriates, 80 per cent., at 10l. 5s. to 10l. 10s., 90: Prussiate, red, 3s. 1d.; ditto yellow, 1s. 7¼d.; chlorate, 1s. 10d.; bichrome, 1s. 1d.; pot-ashes, 38s. 9d. to 39s. 6d.—Saltpetre: Foreign, 32s. to 33s. 6d.; refined, 37s.—Alum: 8l., for loose lump; in export barrels, 8l. 15s.; ground, 9l.—Bleaching Powder: At 17l. to 17l. 10s.—Ammonia: Sulphate, white and grey, 20l. to 22l.; brown, 20l. 10s., 25 per cent.; carbonate, 7d.; muriate, 28l. to 30l.; Ammoniac, firsts, 49s.; seconds, 48s.—Iron Salts: Green and rusty copperas, 55s.; dry copperas, 52s.—Copper Salts: Sulphate of copper, 32l.—Prussiate: 7l. 5s. to 7l. 10s. for white powdered.—Acid: Tartaric at 1s. 8d.; oxalic, 1s. 2d. to 1s. 2d.; sulphuric, 3l. 10s. to 3l. 15s.; carbolic, 1s. 2d. to 1s. 3d.—Magnesia: Epsom salts, 4l. 17s. 6d. for refined. Pitch at 18s.—Benzole; 30 per cent., to 3s. 3d.; 50 per cent., 3s. 3d. to 3s. 9d.; 90 per cent., 4s. 6d. to 4s. 9d.—Disinfectants: Patent, 5l.; carbolic, 10l.—China-clay: 22s. per ton.—Pyrites: English cupreous, 8d. to 8½d.; non-cupreous, 10d.—Phosphates: Ordinary, per cent., 10½d. to 11d.; high strength, 85 to 90 per cent., 1s. 3d. to 1s. 4d. per unit.: Estremadura, 1s. 3d.; super phosphates, 25 to 26 per cent., 3l. 10s. to 3l. 12s. 6d.; precipitated phosphate of lime, 40 to 50 per cent., 5l. 10s. to 6l. 10s. Sanguecee: Ores, 140s. to 150s. for 70 per cent.—Iron Ore; Hematite, 30s. to 32s.; oolitic, 6s. 9d. to 7s. 6d.

TIN TRADE.—Messrs. Van Houten and Ebeling (Rotterdam) write—The tin-market, which was animated in the beginning of the past month, has become quiet during the last weeks. On the 11th ult., the 55,380 slabs offered in the Dutch Trading Company's Spring Sale were disposed of as follows:—52,772 slabs Banca, 96 fl to 98¼ fl; 2,608 slabs Billiton, 94 fl to 94½ fl. Notwithstanding the high range of prices the position of tin may be considered very encouraging to first holders. In the face of an increasing consumption and with low stocks in first and second hands, advices from the principal sources of production (Cornwall, Straits, Banca) continue unsatisfactory, and it looks very doubtful if this year's supplies will be sufficient to meet the requirements of the trade. Banca tin is in strong demand in the early part of April, causing an advance from 93 fl to 95 fl. Since the spring sale the market has assumed a quieter tone, though prices are well maintained. Several "bear" sales for autumn delivery are reported from 88 fl to 93 fl. The comparative cheapness of Billiton has attracted the attention of buyers, and an extensive business has been done from 91 fl to 92 fl, while several parcels "to arrive" changed hands from 92 fl to 95 fl. 8000 peculs offered in public sale at Batavia, on the 8th ult., fetched the average price of 94½ fl., costing to sell here about 94 fl. The next sale, comprising the same quantity, is advertised for Monday, June 3. The position of Banca Tin in Holland on April 30, according to the official returns published by the Dutch Trading Company, was—

	1872.	1871.	1870.
Import in April ..... Slabs	3,263	18,043	32,320
Total four months.....	29,393	45,528	74,432
Deliveries in April	10,743	24,156	16,700
Total four months.....	32,638	53,456	48,590
Stock second-hand	53,829	98,235	91,121
Total stock	62,757	143,051	149,495
Stock of Billiton	4,808	7,422	7,400
Import in April	5,387	8,471	7,600
Delivered and shipped in April ..	5,606	4,100	8,600
Quotation { Banca	97 fl.	76 fl.	78 fl.
30th April { Billiton	91½	75	77

These returns, compared with those of 1871, exhibit—A decrease of the import for April of 462 tons, a decrease of the import for the four months of 504 tons, a decrease of the deliveries for April of 419 tons, a decrease of the deliveries for the four months of 651 tons, a decrease of the stock second-hand of 1288 tons, a decrease of the unsold stock of 1121 tons, a decrease of the total stock of 2509 tons, an advance of the quotation of Banca of 35f. per ton. The quantity of Banca tin now afloat for the Dutch Trading Company is 15,500 peculs, equal to 1,033 tons, against 13,780 peculs, equal to 836 tons, last year. We estimate the quantity of Billiton tin now afloat at 4601 peculs, equal to 278 tons, against 5551 peculs, equal to 666 tons, last year. The Government returns for the month of February are as follows:—

EXPORT OF TIN FROM HOLLAND.

	February.			Two months.		
	1872.	1871.	1870.	1871.	1870.	1869.
Germany ..Tons	162	217	180	423	354	326
England	10	118	28	22	239	93
Belgium ..... }	110	106	19	274	154	274
France ..... }						
Hamburg	23	—	2	43	—	11
United States ..	—	—	—	—	—	—
Othercountries..	3	2	—	12	24	9
Total ..Tons	308	443	229	774	771	713

COPPER ORES.

Sampled April 3, and sold at the Tabb's Hotel, Redruth, May 2.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
West Pool	70	£4 7 9	West Basset	30	£4 11 6
ditto	63	4 10 6	ditto	20	9 4 6
ditto	50	4 16 0	East Grenville	34	3 2 0
ditto	30	4 19 6	ditto	19	6 5 6
ditto	27	4 7 6	ditto	11	2 6 0
West Wheal Seton ..	50	7 0 6	East Seton	45	4 18 0
ditto	43	8 9 6	South Frances	27	7 6 0
ditto	39	13 16 6	ditto	17	6 6 6
ditto	33	3 4 6	Clifford	40	2 15 0
ditto	30	10 3 6	Poldice	29	4 6 6
ditto	25	3 3 6	Wheal Buller	20	12 3 6
South Crofty	65	4 4 0	Wheal Grenville	14	6 9 6
ditto	23	3 19 0	Buglehole's Ore.....	4	4 10 6
ditto	19	3 1 6	West Damsel	4	5 0 0
West Basset	32	4 8 6	St. Aubyn United....	2	11 19 0

TOTAL PRODUCE.

West Pool.....	240	£1083 9 0	Clifford	40	£110 0 0
West Wh. Seton ..	220	1745 19 0	Poldice	29	125 8 6
South Wh. Crofty	100	400 15 0	Wheal Buller	20	248 10 0
West Wh. Basset,	82	463 7 0	Wheal Grenville ..	14	90 13 0
East Grenville ..	64	249 18 6	Bugleh ole's Ore....	7	31 13 6
East Seton	45	220 10 0	West Damsel	4	20 0 0
South Frances ..	44	204 12 6	St. Aubyn United..	2	23 18 0
Average standard.....		£127 19 0	Average produce.....		6⅛
Average price per ton			£5 12 6		
Quantity of ore		911 tons	Quantity of fine copper..		59 tons 11 cwts.
Amount of money			£5113 13 0		

SALE.—Average standard..... £134 3 0—Average produce..... 5⅞
Standard of corresponding sale last month, £127 17 0—Produce, 7.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	136	£ 538 9 9
Sims, Willyams, and Co.	162½	1144 17 3
Williams, Foster, and Co.	149½	1336 5 9
Mason and Elkington.....	192	869 15 6
Copper Miners' Company	174½	722 11 3
Charles Lambert	19½	142 9 0
The Bede Metal Company.....	87	358 4 6
Total	911	£ 5,113 13 0

NO SALE on Thursday next, May 16.

COPPER ORES.

Sampled April 17, and sold at Swansea May 7.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Pape Ore....	75	30	£29 1 6	Berehaven..	80	9½	£8 15 6
ditto.....	74	30¼	29 6 6	ditto.....	72	9⅛	8 15 6
ditto.....	73	30	29 4 6	Parramatta.	81	14¼	14 3 6
ditto.....	71	30	29 5 0	ditto.....	71	14¼	14 1 6
ditto.....	26	31⅛	31 1 0	ditto.....	70	14⅜	14 3 6
ditto.....	85	31⅝	30 15 0	Brass Ashes.	75	4½	2 11 6
ditto.....	85	31⅜	30 14 6	ditto.....	17	4⅜	2 10 6
ditto.....	85	31¾	31 0 0	Copper Ore ..	25	14½	14 2 0
ditto.....	85	31⅝	30 17 6	ditto.....	32	15¼	14 13 0
ditto.....	83	31¼	30 12 6	ditto.....	4	62	61 18 0
ditto.....	82	31¼	30 12 6	Austral. Ore.	18	34¼	34 14 0
ditto.....	37	53¼	52 16 6	Cop. Sludge..	4	24¾	23 10 0
ditto.....	4	35¾	35 1 6	Copper Ore..	20	16¾	16 10 6
ditto.....	6	36½	35 16 6	ditto.....	12	13⅜	13 2 6
Pape Reg....	38	54½	53 7 0	Tigrony Pre.	8	27½	26 14 0
ditto.....	21	54	53 5 6	Copper Ore..	15	14⅜	13 18 0
Knockmahon 104		8⅝	8 5 6	Concordia Ore	7	21⅞	21 11 0
ditto.....132		8⅝	8 5 0	ditto Reg..	1	27⅝	26 5 0
ditto.....101		9⅛	9 0 0	Copper Reg..	11	45¼	44 8 0
Berehaven..124		9¼	8 18 6				

TOTAL PRODUCE.

Pape Ore & Reg.	760	£24,823 17 6	Copper Sludge	4	£ 94 0 0
Knockmahon ..	337	2,858 12 0	Copper Ore	32	488 0 0
Berehaven	276	2,451 6 0	Tigrony Precip. ..	8	213 12 0
Parramatta	222	3,139 15 0	Copper Ore.....	15	208 10 0
Brass Ashes	92	236 1 0	Concordia Ore	8	177 2 0
Copper Ore	61	1,068 18 0	Copper Regulus ..	11	488 5 0
Australian Ore..	18	624 12 0			

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	308	£2869 6 0
P. Grenfell and Sons	175½	3068 8 7
Sims, Willyams, and Co.	129	3034 12 0
Vivian and Sons	256	7160 17 0
Williams, Foster, and Co.	556½	11556 9 7
Mason and Elkington	66	544 10 0
Sweetland, Tuttle, and Co.	185	6029 8 0
Landore Copper Company	158½	2819 1 4
Total.....	1834	£36,872 13 6

Copper ores for sale May 21.—Cape Ore 61, 61, 61, 60, 77, 77—Telhadella 18, 18—Knockmahon 118, 138, 105, 68, 65—Berehaven 137, 119, 68, 34, 76, 71—Parramatta 52, 48—Funsdon 48, 30, 16—Copper Refuse 61.—Total, 1687 tons.

TOTALS AND AVERAGES.

	21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale..	1834	20½	£20 2 1	19s. 6d.	£119 6 6

LONDON GENERAL OMNIBUS COMPANY.—The traffic receipts for the week ending May 5 were 10,634l. 6s. 6d.

AWARDED TWENTY GOLD AND SILVER FIRST-CLASS PRIZE MEDALS.

IMMENSE SAVING OF LABOUR

TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, McADAM ROAD MAKERS, &c., &c.

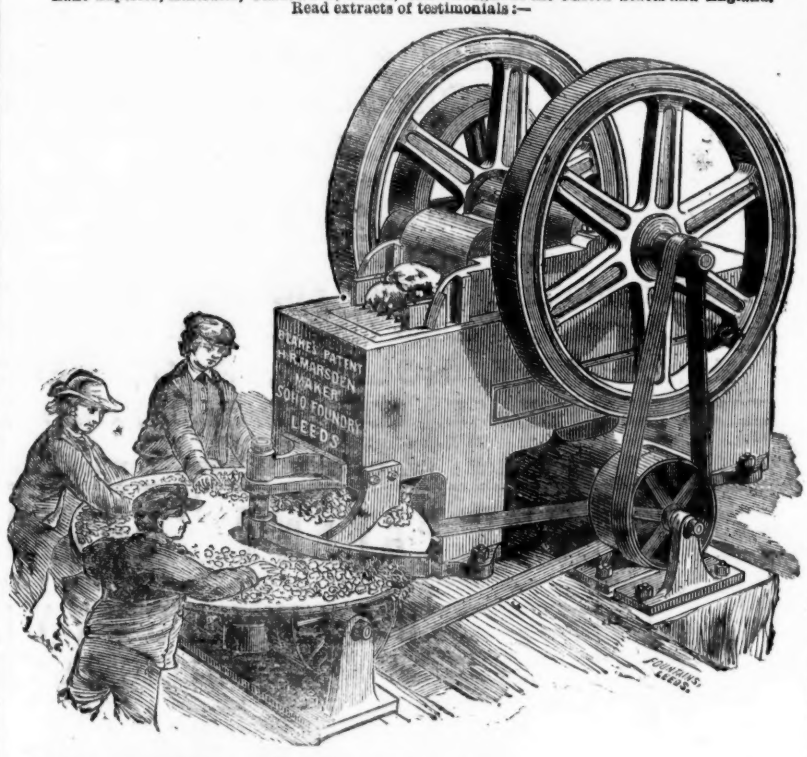
BLAKE'S PATENT STONE BREAKER,

OR ORE-CRUSHING MACHINE,

FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.

This is the only machine that has proved a success. This machine was shown in full operation at the Royal Agricultural Society's Show at Manchester, and at the Highland Agricultural Society's Show at Edinburgh, where it broke 1½ ton of the hardest trap or whinstone in eight minutes, and was AWARDED TWO FIRST-CLASS SILVER MEDALS. It has also just received a SPECIAL GOLD MEDAL at Santiago, Chili.

It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England. Read extracts of testimonials:—



The Parys Mines Company, Parys Mines, near Bangor, June 6.—We have had one of your stone breakers in use during the last 12 months, and Capt. Morcom reports most favourably as to its capabilities of crushing the materials to the required size, and its great economy in doing away with manual labour.

For the Parys Mining Company,
H. R. Marsden, Esq. JAMES WILLIAMS.

The Van Mining Company (Limited), Van Mines, Llanidloes, Feb. 6, 1871.—Our machine, a 10 by 7, is now breaking 180 tons of stone for the crusher every 24 hours. I may say, of all our machinery, that for simplicity of construction and dispatch in their work, they are equal to anything in the kingdom, but your stone breaker surpasses them all. W. WILLIAMS.
H. R. Marsden, Esq., Leeds.

Chacewater, Cornwall, Jan. 27, 1869.—I have great pleasure in stating that the patent stone breaker I bought of you some three years ago for mines in Chili, continues to do its work well, and gives great satisfaction. It crushes the hardest copper ore stone—put it through ¼ inch size by horse power—with great ease. I can safely recommend it to all in want of a crusher; can be driven by steam, water, or horse power.
H. R. Marsden, Esq. JAMES PHILLIPS.

Terras Tin Mining Co. (Limited), near Grampound Road, Cornwall, Jan. 1871.—Blake's patent stone crusher, supplied by you to this company, is a fascination—the wonder and admiration of the neighbourhood. Its simplicity is also surprising. Persons visiting it when not at work have been heard to remark, "This can't be all of the machine." It will crush to a small size from 8 to 10 tons of very hard and tough elvan rock per hour; taking into its leviathan jaws pieces of the hardest rock, weighing 200 lbs. or more, masticating the same into small bits with as much apparent ease and pleasure as does a horse his mouthful of oats. On every 100 tons of the rock crushed by the machine there is a direct saving to the company of not less than £5 over the process of hand labour previously adopted by them, and the indirect saving much more, the machine being ever ready to perform the duties required of it. It breaks the stuff much smaller, and in form so fitted for the stamps, that they will pulverise one-third more in a given time than when performed by hand labour.
JOS. GILBERT MARTIEN.
H. R. Marsden, Esq., Leeds.

Welsh Gold Mining Company, Dolgelly.—The stone breaker does its work admirably, crushing the hardest stones and quartz. WM. DANIEL.

Ovoca, Ireland.—My crusher does its work most satisfactorily. It will break 10 tons of the hardest copper ore stone per hour.
WM. G. ROBERTS.

General Frémont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 30 men, or $75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate. SILAS WILLIAMS.

Your stone breaker gives us great satisfaction. We have broken 101 tons of Spanish pyrites with it in seven hours. EDWARD AARON.
H. R. Marsden, Esq. Weston, near Runcorn.

For illustrated catalogue, circulars, and testimonials, apply to—

H. R. MARSDEN, SOHO FOUNDRY,

MEADOW LANE, LEEDS,

ONLY MAKER IN THE UNITED KINGDOM.

BY APPOINTMENT TO HER MOST GRACIOUS MAJESTY THE QUEEN.

FEARFUL

BOILER EXPLOSIONS AVOIDED BY USING PAYNE'S ANTI-CORROSIVE FLUID.

It is highly recommended by Engineers to Proprietors of Steam Boilers (Marine or Stationary) for PREVENTION and REMOVAL of INCRUSTATION. The price is 6s. per gallon. One gill per horse power per week will remove any incrustation from old boilers, and keep new perfect.

[CERTIFICATE.]

"19, *Staunton-terrace, Blue Anchor-road, S.E., March* 12, 1869.

"DEAR SIR,—I have minutely examined your Anti-Corrosive Preparation, and can state with confidence that in no way is it injurious to iron or brass. It is inodorous and perfectly harmless, even when swallowed. T. R. L. HOOPER, M.R.C.S.L.
"Mr. Payne."

ORDERS ADDRESSED TO

PAYNE AND CO.,

33, CHERRY GARDEN STREET, BERMONDSEY, LONDON, S.E.

CHAS. PRICE AND CO.'S RANGOON ENGINE OIL,

AS SUPPLIED TO H.M. DOCKYARDS AND FLEET.

THIS OIL is suitable to every kind of Machinery. As a lubricant it is equal to the best Sperm or Lard Oil, while it possesses the great advantage of being entirely free from any principle which will corrode the metal bearings.

For particular kinds of Machinery, the Oil may be specially prepared of a consistency and character adapted to the nature of the work to be done.

"Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I herewith certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is indeed calculated to protect metallic surfaces from oxidation.

"The lubricating power of this oil is equal to Sperm or Lard Oil.

"T. W. KEATES, F.C.S., &c. &c."

Every parcel of the Oil sent from the work bears the Trade Mark of the Firm.

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WORKS: MILLWALL, POPLAR; and ERITH, KENT

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PUMP LEATHER
WATERPROOF

By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of

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MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED
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From the very best quality of charcoal iron and steel wire.
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THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
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ESTABLISHED 1824.

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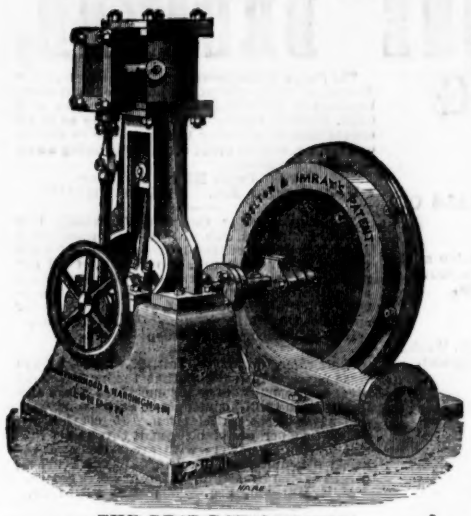

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Kittoe and Brotherhood's Patent "PARAGON" STEAM PUMPS (Sole Manufacturers).
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IMPROVED GAS EXHAUSTERS.
SCREW-PILE DRIVING MACHINES.
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Pumping Machinery of all kinds.
56 and 53, COMPTON STREET, GOSWELL ROAD, LONDON, E.C.

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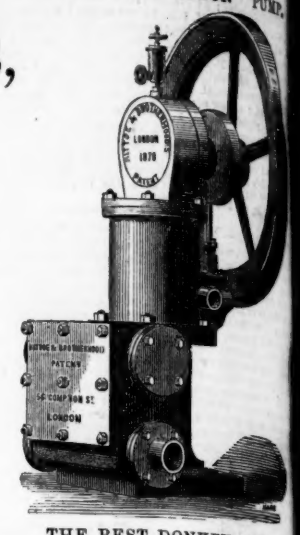

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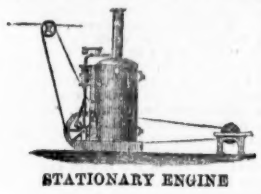

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The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. CHAPLIN in 1855. Each class kept in Stock for Sale or Hire.

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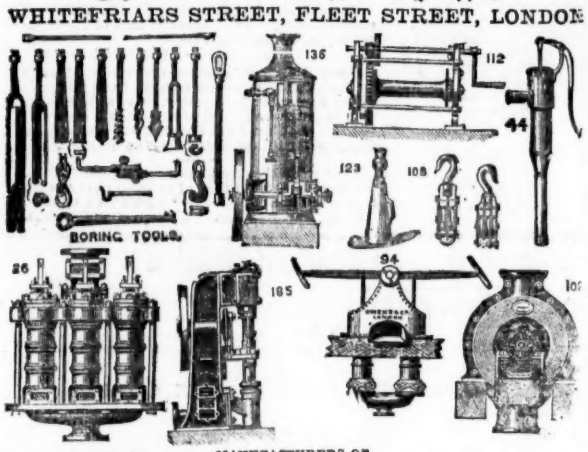

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FOR

GREAT ECONOMY

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CLEAR WIDE SPACE.

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CORPORATION STREET, BELFAST.

The above drawing shows the construction of this cheap and handsome roof now much used for covering factories, stores, sheds, farm buildings, &c., the principals of which are double bow and string girders of best pine timber, sheeted with ¾ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 60s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity required, 8d. per gallon.

THE PATENT "UNIVERSAL" STEAM PUMP,

SOLE MAKERS,

HAYWARD TYLER AND CO.,

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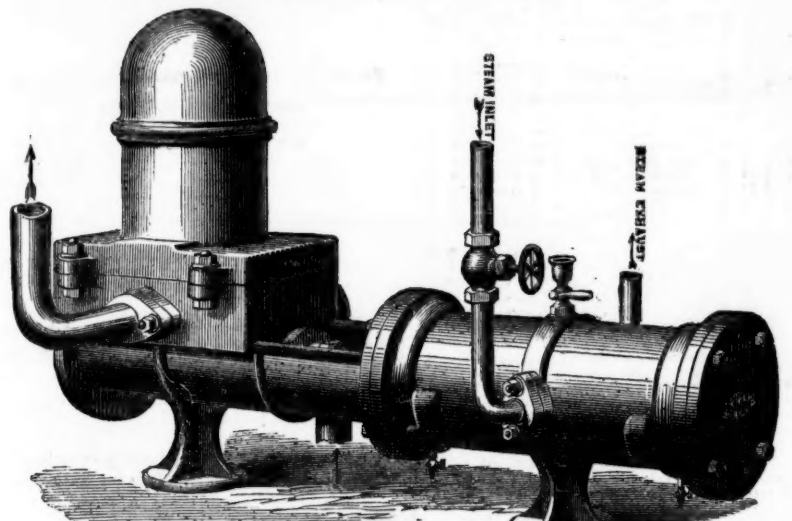

The unprecedented success obtained by the above Pumps, owing to their great simplicity and efficiency, induces their (sole) Makers,

HAYWARD TYLER AND CO.,

84, UPPER WHITECROSS STREET, LONDON,

To call the attention of Colliery Proprietors to their use. Numerous testimonials can be forwarded.

TESTIMONIALS.

To Messrs. HAYWARD TYLER and Co., 84, Upper Whitecross-street, London. *Acton Main Coal Company, near Sheffield.*

GENTLEMEN,—In answer to your enquiry, I beg to state that the two "Universal" Pumps supplied to us (through your agent, Mr. T. A. Ashton) are doing our work exceedingly well; we think they are the best in the market, and shall be glad if you will send us another 9-inch cylinder 6-inch pump, one week from this date.

Extract of a Letter from JOHN SIMPSON, Esq., to Hayward Tyler and Co.'s Agent.
Rhos Llantwit Colliery, Caerphilly, near Cardiff, March 4, 1872.

I should like to have the water-piston and clacks the same as in our present pump, as they work exceedingly well, and I do not think it is possible to improve upon the present pump, except by lining the cylinder with brass as ordered.

THE HOWARD SAFETY BOILER,

For STATIONARY and MARINE ENGINES, has the following advantages:—

SAFETY; NO RISK from DANGEROUS EXPLOSION; HIGH-PRESSURE STEAM, with ECONOMY OF FUEL; perfect circulation, and ready means of removing sediment.

Saving of cost and time in repairs; portability, and, for export, great saving in freight.

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